

8b

TH

435

B43

1878

EALE'S

DIMENTARY

SERIES

156

*QUANTITIES
AND MEASUREMENTS*

1/6



LOCKWOOD & CO
LONDON

692.5

B383

Ed 5

**WEALE'S RUDIMENTARY SCIENTIFIC
AND EDUCATIONAL SERIES.**

The following are the Works already published in
ARCHITECTURE, BUILDING, &c.

(The Volumes are bound in limp cloth, except where otherwise stated.)

ARCHITECTURE—ORDERS—The Orders and their

FRANKLIN INSTITUTE LIBRARY

PHILADELPHIA

Class 692.5 Book B383 Accession 601

Ed 5

those books intended for circulation.

ARTICLE VI.—The Secretary shall have authority to loan to Members and to holders of second class stock, any work belonging to the SECOND CLASS, subject to the following regulations:

Section 1.—No individual shall be permitted to have more than *two books* out at one time, without a written permission, signed by at least two members of the Library Committee; nor shall a book be kept out more than **TWO WEEKS**; but if no one has applied for it, the former borrower may renew the loan. Should any person have applied for it, the latter shall have the preference.

Section 2.—A FINE OF TEN CENTS PER WEEK shall be exacted for the detention of a book beyond the limited time; and if a book be not returned within three months it shall be deemed lost, and the borrower shall, in addition to his fines, forfeit its value.

Section 3.—Should any book be returned injured, the borrower shall pay for the injury, or replace the book, as the Library Committee may direct; and if one or more books, belonging to a set or sets, be lost, the borrower shall replace them or make full restitution.

ARTICLE VII.—Any person removing from the Hall, without permission from the proper authorities, any book, newspaper or other property in charge of the Library Committee, shall be reported to the Committee, who may inflict any fine not exceeding twenty-five dollars.

ARTICLE VIII.—No member or holder of second class stock, whose annual contribution for the current year shall be unpaid or who is in arrears for fines, shall be entitled to the privileges of the Library or Reading Room.

ARTICLE IX.—If any member or holder of second class stock, shall refuse or neglect to comply with the foregoing rules, it shall be the duty of the Secretary to report him to the Committee on the Library.

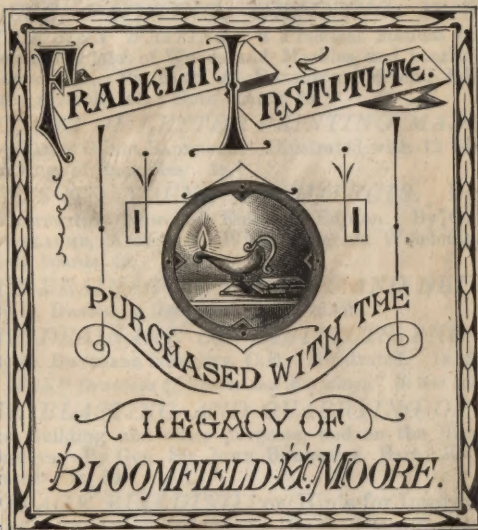
ARTICLE X.—Any Member or holder of second class stock, detected in mutilating the newspapers, pamphlets or books belonging to the Institute shall be deprived of his right of membership, and the name of the offender shall be made public.

A SELECTION FROM WEALE'S SERIES.

A BOOK ON BUILDING, Civil and Ecclesiastical; including Church Restoration; with the Theory of Domes and the Great Pyramid, and Dimensions of many Churches and other Great Buildings. By Sir EDMUND BECKETT, Bart., LL.D., Q.C., F.R.A.S., Chancellor and Vicar-General of York. Second Edition, Enlarged, 4s. 6d.; cloth boards, 5s.

PLUMBING: a Text-book to the Practice of the Art or Craft of the Plumber. With Chapters upon House Drainage, embodying the latest improvements. By W. P. BUCHAN, Sanitary Engineer. Second Edition, revised and much enlarged. With 300 Illustrations. 3s. 6d.; cloth boards, 4s.

H
C
f
TE
E
H
V
G
TE
B
TE
B
*
TE
f
B
tr
CO
in



BLING,
With 9
50 Wood
ion, care-

EASY.
-page En-

GEORGE
HUSKISSON
3s. 6d.;

DINGS,
LANDS.

3s. 6d.
STONE,
ng up of
B. Illus-

1 Dwell-
Architect.

Illustrated. New Edition, 1s. 6d.

FOUNDATIONS AND CONCRETE WORKS. By E. DOBSON, M.R.I.B.A., &c. 1s. 6d.

LIMES, CEMENTS, MORTARS, CONCRETES, MASTICS, PLASTERING, &c. By G. R. BURNELL, C.E. 1s. 6d.

WARMING AND VENTILATION; being a Concise Exposition of the General Principles of the Art of Warming and Ventilating Domestic and Public Buildings, Mines, Lighthouses, Ships, &c. By CHARLES TOMLINSON, F.R.S., &c. Illustrated. 3s.

CONSTRUCTION OF DOOR LOCKS AND IRON SAFES. Edited by CHARLES TOMLINSON, F.R.S. 2s. 6d.

CROSBY LOCKWOOD & CO., 7, STATIONERS' HALL COURT, E.C.

BOOK OF THE HISTORY OF THE UNITED STATES, FROM THE FIRST SETTLEMENTS TO THE PRESENT TIME. BY JAMES M. SMITH, ESQ. VOL. I. NEW-YORK: PUBLISHED BY J. B. ALLEN, 1840.

CONTENTS. PART I. THE DISCOVERY AND SETTLEMENT OF THE UNITED STATES. CHAPTER I. THE DISCOVERY OF THE UNITED STATES. CHAPTER II. THE SETTLEMENT OF THE UNITED STATES.

PART II. THE HISTORY OF THE UNITED STATES. CHAPTER I. THE HISTORY OF THE UNITED STATES. CHAPTER II. THE HISTORY OF THE UNITED STATES.

PART III. THE HISTORY OF THE UNITED STATES. CHAPTER I. THE HISTORY OF THE UNITED STATES. CHAPTER II. THE HISTORY OF THE UNITED STATES.

PART IV. THE HISTORY OF THE UNITED STATES. CHAPTER I. THE HISTORY OF THE UNITED STATES. CHAPTER II. THE HISTORY OF THE UNITED STATES.

PART V. THE HISTORY OF THE UNITED STATES. CHAPTER I. THE HISTORY OF THE UNITED STATES. CHAPTER II. THE HISTORY OF THE UNITED STATES.

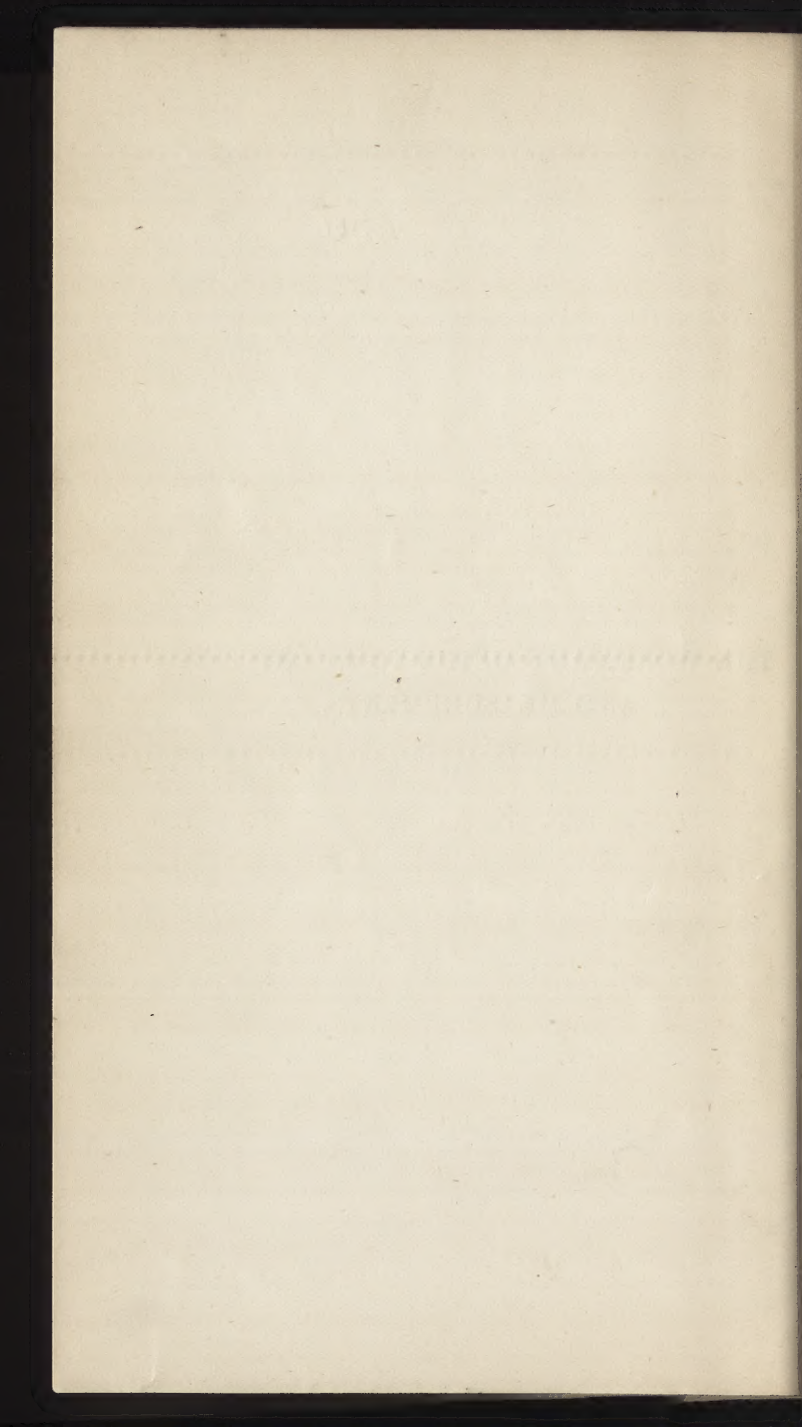
PART VI. THE HISTORY OF THE UNITED STATES. CHAPTER I. THE HISTORY OF THE UNITED STATES. CHAPTER II. THE HISTORY OF THE UNITED STATES.

PART VII. THE HISTORY OF THE UNITED STATES. CHAPTER I. THE HISTORY OF THE UNITED STATES. CHAPTER II. THE HISTORY OF THE UNITED STATES.

PART VIII. THE HISTORY OF THE UNITED STATES. CHAPTER I. THE HISTORY OF THE UNITED STATES. CHAPTER II. THE HISTORY OF THE UNITED STATES.

PART IX. THE HISTORY OF THE UNITED STATES. CHAPTER I. THE HISTORY OF THE UNITED STATES. CHAPTER II. THE HISTORY OF THE UNITED STATES.

THE WORKMAN'S GUIDE TO QUANTITIES
AND MEASUREMENTS.





QUANTITIES AND MEASUREMENTS

HOW TO CALCULATE AND TAKE THEM

IN BRICKLAYERS', MASONS', PLASTERERS', PLUMBERS', PAINTERS', PAPER-
HANGERS', GILDERS', SMITHS', CARPENTERS', AND JOINERS' WORK

WITH RULES FOR ABSTRACTING, HINTS FOR PREPARING A BILL OF QUANTITIES, AND
PRICES FOR ALL WORK IN THE BUILDING TRADE

By ALFRED CHARLES BEATON

ARCHITECT AND SURVEYOR
FRANKLIN INSTITUTE

Fifth Edition, revised and enlarged
FRANKLIN INSTITUTE



LONDON

CROSBY LOCKWOOD & CO.

7, STATIONERS' HALL COURT, LUDGATE HILL

1878

CONS
TH
435
B43
1878

ALBERT L. BROWN
ALBERT L. BROWN

ADVERTISEMENT.

THE object of the Author has been to place in the hands of students and practical men—of masters and workmen—architects, builders, and their employers, no less than in those of “’prentices in the craft,” young men learning their profession or calling, an easier method for taking Quantities and Measurements of different work in the Building Trade, than that usually gleaned from books, and one that has reference to the practice now generally adopted by Surveyors.

The Rules for Abstracting, and the Hints for preparing a Bill of Quantities, together with the carefully prepared lists of Prices for Work in all Branches of the Building Trade, now added, will enable every workman to prepare his own bill, and save him both trouble and expense. The prices can be implicitly relied upon.

27, NEW STREET, BROMPTON:

July, 1874.



CONTENTS.

	PAGE
GENERAL INSTRUCTIONS	9
BRICKWORK	12
SLATER	18
CARPENTER	19
JOINER	24
SMITH	40
MASON	43
PLASTERER	51
PLUMBER	56
GLAZIER	57
PAINTER	58
IMITATION OF WOODS	61
PAPERHANGER	62
GILDER	62
ABSTRACTING	63
HINTS FOR COLLECTION OF QUANTITIES	66

	PAGE
PRICES FOR ALL WORK IN THE BUILDING TRADE:—	
Excavation.	69
Well Boring	70
Concrete	70
Brickwork	71
Paving	72
Pantiling	72
Plaintiling	72
Pointing	73
Paving in Encaustic Tiles	73
Slater	74
Carpenter	75
Joiner.	77
Smith	91
Mason	92
Plasterer	97
Plumber	99
Glazier	100
Painter	102
Paperhanger and Decorator	105
Gilder	106

THE WORKMAN'S GUIDE
TO
QUANTITIES AND MEASUREMENTS.

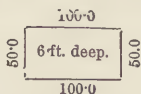
It is strongly recommended to adopt, without deviation, one course. In taking the dimensions of external work, always commence in the front, at the left hand of the building, working round to the right. In excavations, brickwork, &c., take the front and back wall from out to out the end, and other walls in the clear.

In internal dimensions, in every trade, take floor by floor, beginning at the left hand side and working round.

For all figures in the dimension book adopt the same plan, and if it happens that months after the measurement is referred to, no difficulty will arise in easily finding any given dimension.

Excavation (per foot cube).—Take the dimension of front, allowing 6 inches at each end to work in, beyond the external quoin of the brickwork; then measure the back front to ascertain

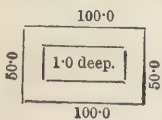
if the building is built at right angles ; take ends with same allowances. Providing the building is at right angles. the dimensions would be



After cubing it, divide the quantity by 27, the number of cubic feet in a yard, and the excavation is given.

If wheeled above 15 yards, describe how much, the cost varying as the distance increases ; also if excavated deeper than 6 feet. If carted away, say to what distance. All excavations for cess-pools and drains are measured in the same way, with a small allowance to work in ; describe depth, distance wheeled, carted, &c.

Trenches (cubic yard).—Digging trenches for foundations should be separate from excavating for the whole site, the former being usually filled in, levelled and rammed at bottom and sides. Suppose the building to be at right angles, and widths the same, the four walls for digging may be collected together, forming a distinct dimension,



the front and back from outside to outside, and ends in clear. If the building is not at right angles, or of different widths, each length must be taken separately, beginning at front and

working round. Describe which is outside to outside, and which is clear; after having taken outside, proceed to digging piers, internal walls, &c.

Concrete (cubic yard.)—Measured like excavation to trenches, but the nett quantity; describe the proportion of stuff and the height thrown from; take all depths, and in cases of large areas filled in, take a super. dimension of all upper surfaces levelled.

BRICKWORK.

In London and its vicinity brickwork is reduced to the rod of 272 feet super., of a standard thickness of $1\frac{1}{2}$ brick. This operation is performed as follows:—400 feet in 2 bricks is taken as 800 feet in 1 brick; 200 feet in $2\frac{1}{2}$ bricks as 200 feet in 1 brick, and 200 feet in $1\frac{1}{2}$ brick; 200 feet in $1\frac{1}{4}$ brick as 250 feet in 1 brick; 250 feet in $1\frac{3}{4}$ brick as 250 feet in 1 brick and 125 in $1\frac{1}{2}$ brick; 200 feet in $\frac{1}{4}$ brick as 50 feet in 1 brick; 200 feet in $\frac{3}{4}$ brick as 100 feet in $1\frac{1}{2}$ brick.

When the quantity of 1 brick thick is added ap, multiply by 2 (the number of $\frac{1}{2}$ bricks in 1 brick), and divide by 3 (number of $\frac{1}{2}$ bricks in $1\frac{1}{2}$ brick), then add the same to the column of $1\frac{1}{2}$ bricks, dividing the whole by 272 to bring it into rods.

Solids, as piers, &c., to be cubed. To reduce them to standard thickness of $1\frac{1}{2}$ brick, multiply the quantity by 8 (number of $1\frac{1}{2}$ in a foot), and divide by 9; then divide by 272, thus bringing to rods.

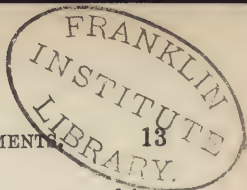
Suppose a pier to be 30 feet high and 4 feet square—

$$30 \times 4 \times 4 = 480.$$

$$3840 \div 9 = 426.$$

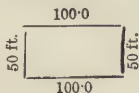
$$480 \times 8 = 3840.$$

$$272^{\text{ft.}} \overline{)426(1^{\text{rod}} 54.}$$



Footings are taken as they occur, by taking the thickness on the average. (— — —)
 Ground average 2' 3" wide, then (| 9' |)
 say 10 feet long by 3 feet— ([])
 $10' \times 3' \times 2' 3" = 67' 6"$ digging and carting.

Brickwork.—Commence with the footings; thus, if the erection is at right angles:—



Should this not be the case, each wall must be taken separately—the front and back walls from outside to outside, the flank walls in the clear. If the thickness of the footings can be averaged, one dimension will do; if not, each course should be taken by itself. Then take the walls immediately above the footings to the top of the joists of the ground story, describing the number of bricks thick, and so on, floor by floor, to the roof. Should the walls of upper floors be of the same thickness, it is still suggested to take them floor by floor, clearing off all additions, as breasts, trimmers, &c., with the deductions to each.

Chimney Breasts and Trimmers.—For chimney breasts take width by height on each floor; state thickness; allow for openings as they occur; measure length of trimmers by girth.

Cornices.—Take the length of all projections

for cornices, fascias, strings, &c., by their several widths; say thickness of brick.

Cement.—If any brickwork is carried up in cement, take quantity and add to general brickwork; but make a separate item in bill.

Circular Work.—Measure as directed for other work, but take the girths instead of width; heights, &c., as before.

Ovens and Coppers.—Measure solid; allow for ash-holes.

Facings (per foot super.)—Take the width of the front wall, and returns by height; allow cornice and strings, if any; subtract all openings, adding reveals; also front of all gauged arches, and state nature of facing.

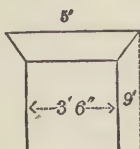
Pointing (per foot super.)—Measured as facing, or by the 100 feet.

Brick-nogging (per yard super.)—Take length by height; allow apertures (doors only); divide by 9 for yards; say how bricks are laid. All quarters and other wood given in.

Cuttings (per foot super.)—Measure the length by width for wide splays; if rubbed bricks, specify. This part of the work requires particular attention.

Splays (per foot run).—All splays are measured by lineal measure; if bricks are circular, and rubbed, &c., mention same.

Gauged Arches.—Take lowest line between reveals; add skewback, by front of gauged work, thus:—



Arched Work.—Where common vaults occur, take the quantity on dotted line. Arches described as 14" should be taken as 12" on face. Where 9" reveals occur to large openings, the arches should be measured solid and separately regarded. Occasions seldom occur to specify work in seconds, as invariably the work is executed in malms.



Measure herring-bone arches extra face only; for example, arches in cement, if cut.

Mention separately all frames bedded and pointed; all flues cored; and ends of any bars to grates which have been restored.

Circular Gauged Arches are measured as follows—for example: Semicircular arch to be 3' 6" between reveals. Take half circumference by front of arch, then half circumference at 3' 6" diameter by depth of reveal for soffit; subtract outer face of arch from facing.



Chimney Caps. — Specify separately; how finished; and give sketch in dimension book.

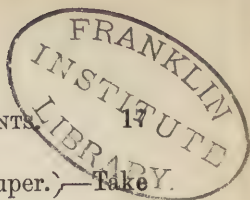
Creasing (Plaintile) is measured by lineal measure; state if single course or otherwise; mention thickness of wall, and how the work is rendered.

Drains are measured by foot run. Take all dimensions, and how work is rendered. *Cesspools* measured as common brickwork. *Drains* not measured through the traps. Specify ends of all pipes made good; collect number of stones and gratings.

Paving is measured by the superficial yard. Multiply length by width; if plan is irregular, take the average. Run cutting and waste where it requires it; say how laid and how rendered; also state the description of bricks used.

Deductions.—It is suggested to let the width of all openings appear first, and then the height. If this rule is adopted as the universal one, there will be but little trouble in reference. Chimney bars average $2\frac{1}{2}" \times \frac{1}{2}"$ and 2 ft. 3 in. longer than openings.

Abstract window openings in two distinct dimensions: 1. External, between reveals of windows; 2. Internal, ditto. Deduct from all brickwork any material more than 8" high, allowing $1\frac{1}{2}"$ for bedding in mortar.



Pantiling (per square 100 feet super.)—Take extreme length of eaves, by depth of same. If a hipped roof with valleys, the return B will make good the front A. If the edifice is at right angles, double the dimension for front and back; take the centre of the two hips marked *c*, by 1' 3" in width, and the cutting to the four hips also by 1' 3" in width, abstracting for shafts, &c. Specify generally how the work is performed; take the dimension of the circular tiling to ridges and hips; enumerate T-nails and hooks; if any filleting, measure lineally. In the case of plain tile eaves, collect lengths, inclusive of hip ends, by their depth; they would, collected, be 300 feet.



Plaintiling is calculated by the square of 100 feet. Measure in like manner as pantiling, but add the whole round of 300 feet by a width of $4\frac{1}{2}$ for eaves. Barge or other course, by foot run.

Generally.—To every portion of the work state the quality of material used.

SLATER.

All slates are measured on the same principle, *i.e.* per square of 100 feet super.

Take the description given for measurement of tiling—the hip or valley made good by the return. Take the 300 feet by a depth being the average of the five last courses; calculate the cutting of hips or valleys by 1' 3" in width (as in tiling). Give description of nails used. For all hips and valleys allow 1' 3" wide by their length. If the building is of irregular shape, multiply length of walls by 7" for cutting "countess" and "ladies," 10" for "duchess," 12" for "queens." Take all edges of curbs as eaves. To all gable walls, stacks, or any work against which slates are fitted, allow a dimension by 7" for cutting, excepting always large skylights, which will do away with cutting

Cisterns (per foot super.)—Take the length of the bottom by the width, and the dimensions of sides by height. Describe the workmanship. Slate cisterns are usually enumerated, and the quantity of water they hold is mentioned, or an inside super. dimension is taken; and the bolts and all fastenings are generally specified, as well as the thickness and quality of the slate.

Specify separately where sawn edges occur.

CARPENTER.

Describe the quality and colour of timber and deals.

Generally.—All timber work is measured by the foot cube; allow for all framings, dovetailings, &c., &c.; take the extreme length from out to out by scantling. Keep separate all wall-plates, lintels, and wood bricks, also framed timbers and any trussed work, as they are of different value. Calculate the cuttings and waste to hips, and any irregular lines, by lineal measure. Measure floor by floor; booking all items of one before another is commenced.

The wall-plates, wood bricks, lintels, &c., may be added up at the side of the general mass of collections, forming one dimension for each scantling. As before suggested, commence measuring at one given point throughout each floor, first taking such as wall-plates, bond wood bricks; secondly, all centering, presently described; then the joists and all partitions, with their mems. of additions and deductions; lastly, take the roof. Pole-plates to roof are always taken as framed timbers.

Note all the smith's and founder's work as the measuring is proceeded with.

Wall-plates and Wood Bricks, &c. (per cubic foot).—Add up lengths by the scantling; particularise all framing, &c.

Lintels, &c.—Measure lengths, to which add what they bear on the walls, by the scantling.

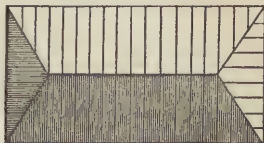
Floor Joists (per foot cube), as framed timbers.—Measure length of joist, and what they bear on the wall, by scantling; deduct chimney breasts, and openings for slabs, but add trimmers, and any centering that occurs. Springing pieces are measured as presently described (deduct well-hole to staircase, and add trimmers).

Strutting is taken by foot run; mention if her-ring-bone.

Partitions are measured as framed timbers.—Take the lengths of the head and sill, including part in wall, by scantling; the height of the door and principal posts, inclusive of tenoning, by scantling; braces and quarters in a similar way; the length of the door heads, inclusive of framing in posts and the quarters, by their scantling. The quarters generally are merely nailed in.

Roof.—Measure the various lengths of the different portions of roof: ridge hips and valley pieces by their depths, which will give a super. dimension; describe the thickness as framed; take the entire lengths by foot run, for cutting and waste. Take the extreme length of the rafters from end

to end, by the scantling; specify them along the front as all long rafters, leaving the short ones at the hip end to make good. If the building is square, double the number of rafters for the back, and add one for the centre of each hip end. Pole-plates, collar-beams, purlins, angle or dragging ties, struts, ceiling joists, are always taken the full length, including every dovetail and all framing, by their several scantlings.



Trussed work being generally worth 20 per cent. more, should be kept separate.

The King and Queen Posts, Principal Rafters, &c., ought to be calculated by their mean lengths and particular scantlings. All rolls by the foot run, stating sizes. Subtract one shoulder in a roof, with a king post.

Wrought and Framed Partitions (per foot cube).—All prepared timbers in scantlings above 4×2 to be measured by the foot cube; the entire lengths, including framing, by the scantling. If timbers run large, take them as rough and framed, and measure the prepared face by the foot super.; rebating, beading, &c., by foot run; but give the sizes.

Circular Timbers (per foot run).—Measure as

they occur, adding scarfings, laps, &c. In the price, the cutting should be allowed. Describe what sweep, whether quick, elliptic, &c. &c.

Gutters (per foot super.)—Take length by width; state thickness, the size of bearers, and how far apart; also state where any framing occurs. Calculate length, and multiply by width; describe thickness; measure drips, rolls for leads, &c., by the foot run. Specify cesspools to gutters, giving all dimensions.

Slate Battening (per square).—Measure battening by depth; specify width and thickness. Take the whole dimension of building, including hip ends for tilting fillets, and calculate by the foot run; state the width, if necessary.

Wall Battening (per square).—Collect the dimension of walls; multiply by the height; say what thickness and width, and how far separate, allowing for any openings.

Ceiling Battening (per square) is measured as wall battening. Describe, if not level face, the thickness, &c.

Angle Staves (per foot run).—Take height down to the skirting line; state if square, staff-beaded, or otherwise.

Sound Boarding (per square).—Measure length by width; say what thickness, and how filleted, inclusive of timbers.



If the plan is irregular, take the average ; state how edges are left, if worked for current, and give all sizes, so that, if occasion require it, the reference will be easy.

Bracketing (per foot super.)—Add up lengths of bracketing to cornices, forming the whole dimension of the room, by the girth ; state thickness. Enumerate angular and other brackets.

Ribbed Centering (per foot super.)—All the centering to wide reveals should be taken by the foot super.

Centering to Vaults (per square).—Take the length by the girth ; state how many ribs, and the thickness of the boards they are covered with, if shifted. Allow for removing centres and re-fixing.

Centering to Chimney Trimmers (per foot super.)—Measure the length by the girth. All turning pieces to be calculated by the foot run.

Centering to Rough Arches (per foot run).—Take the length between reveals, adding $1\frac{1}{2}$ inch.

Centering to Gauged Arches.—In like manner, including struts ; name the width of reveal ; if a semi-head, calculate as before directed, but by the foot run.

JOINER.

Generally.—State the quality and colour of the deals and battens. Keep to one methodical way in taking the measurements throughout. Take floors first; the doors, jamb linings, and architraves, grounds, &c.; then the skirtings; then fronts to cupboards, and general framing; finish with angle beads, soffits, and margins.

Floors (per square).—Measure all lengths by their widths, inclusive of skirtings on each side; if plan is not at right angles, then take the average. Cutting and waste are measured by foot run, which should be calculated on all and every line where such cutting, &c., occurs. Deduct chimney breasts, and all slabs taking super. dimension. Take full lengths of glued and mitred border to slabs, and also flooring in recesses; mentioning the thickness, and if wrought and laid folding. Number all heading joints, and say if splayed, or ploughed and tongued.

Should the boards be gauged to any width, say so, and specify if batten floors.

Measure room nett, but no deduction to be made for slab. For splay, or any irregular plan, run the dimension, and allow for waste.

Enumerate scribing, notching, &c.

In the case of floors joining stone, allow for cross joint.

Plinths are measured per foot super., including mitres, tonguings, housings, &c., by the width. State the thickness; also say if double or single rebated, backed, &c. Take the lowest moulding by the foot super.; but if 5" girth, or under, by the foot run.

Enumerate all mitres and housings to all mouldings to each plinth; also state if straight, circular, bent, or glued up in thickness.

All Thicknesses (per foot super.)—Multiply all dimensions on the face, the height by width, stating the several thicknesses from $\frac{1}{2}$ " up to 4"; if under 3" wide, then measure them by the foot run. State if rough edges, shot, wrought one or both sides, ploughed and tongued, or otherwise; ditto and beaded, rebated; ditto and beaded, dovetailed; mortice clamped, keyed, glued, blocked, backed, tongued, moulded, beaded, staff beaded, &c.

Skirtings, &c. (per foot super.)—Take the whole lengths, adding all passings to angles; also if backed up, or where any plugging occurs. Plinths are measured in like manner, including mitres, housings, &c., by the width. State thickness; also say if single or double rebated, &c. Measure lowest moulding by foot super., but if 5" girth

or under, by the lineal foot. Enumerate all mitres and housings to all mouldings; also define the same, and if glued up in thickness.

Enumerate all ends where work is returned, also housings, mitres, beads, &c.

Pilasters are measured superficially, taking in edges if more than 11" wide. Say if cross-tongued. Rebated and mitred angles, cross-tongued and any glued joint, to be run; also glued and blocked angle caps, and all bases and mouldings. Allow for mitres.

Grounds.—Cast up the lengths on walls; specify width and thickness, and if straight, circular, or wreathed, or otherwise; make note of any plugging.

Skirtings are always run, and the practice is to take narrow grounds with same.

Fixed Sashes, &c. (by the super. foot).—Multiply the width by the height from outside to outside; state what thickness, and if the bar is square or splayed, or any other more detailed bar. Measure all beads and stops by foot run. Calculate the labour to them and to any linings, describing thickness, and if wrought, mitred, beaded, or otherwise.

Sashes and frames are measured by the foot super. Take the width between the pulley pieces, adding 6" on each side for the frame; multiply



by height from sill to under side of frame, adding 6 in. for the head, and $3\frac{1}{2}$ in. for the thickness of the sill. State particularly the casing, and generally describe the sill, the wood, and workmanship. Number deal or other pulley pieces, and beads, &c. Fully describe sashes as to thickness, and if the bars are square, or any fancy bars, describing them. Also state the quality of the lines, weights, and pulleys.

If circular on plan, take girth instead of width, adding 8 in., and describe the sweep. If any side lights, fully describe the same. Particularise all furniture.

Sashes and frames can be measured from outside to outside each way, and $1\frac{1}{2}$ in. allowed for meeting bar, as it frequently happens that on the drawing the window opening only can be seen; if so, add 9 in. to the exact opening of width, and 8 in. to height.

Circular heads are measured square (making a small allowance), and then charged separately, measurements being taken from the springing line.

Semi-headed Sashes (by foot super.)—Take the nett quantity; take the width between the pulley pieces, adding the two 6" for the diameter; the superficial contents are ascertained by multiplying half the circumference by half the diameter, and taking the half of the product.

Boxing Shutters (per foot super.)—Take the height between the sash-beads of head and sill by the mean width of the two front (or centre) shutters, adding the rebates. State the thickness, number of panels high, how many heights hung in, and if splayed; also say if square-moulded, bead butt, or bead flush, on one or both sides. Collect the butt hinges (by the pair), giving the size taken at the knuckle; also the strap hinges to back flaps. Enumerate shutter bars, describing them, and state the length. Enumerate all the shutter knobs, giving a proper and fair description to each set. The back flaps are taken in every respect same as the fronts.

Take all the ironmongery with the joiner's work; it is also best to attach the items to the measurements as they are taken, giving a full description of each article; also describe the quality and the material they are composed of; furniture, &c.

Soffits (per foot super.)—Take the lengths, including passings, by the width of one of the front shutters; describe the thickness of paneling, &c., and state if splayed.

Wall linings are taken by the nett surface. Allow only for an irregular plan or any waste if a semi-headed door or window lined up with plaster bead, and soffit.

Take circular rib for backings.

Run all labour housings; also all ploughed and tongued joints to angles.

Back Linings (per foot super.)—Take the height of the shutters (adding $2\frac{1}{2}$ " which will give the height of the back lining), by the width of one of the front shutters. State the thickness, the number of panels in height, and say if plain keyed square panels, or bead butt or bead flush, and if splayed. Allow for back linings $2\frac{1}{2}$ " longer than the shutters, and the extreme width, including tongues.

Window Backs (per foot super.)—Multiply the width by the height from the floor to the capping; specially describe the thickness; how many panels; if plain keyed, square moulded, bead butt, or bead flush; take the lengths of all the beaded capping by the foot run.

Elbows (per foot super.) are taken in a similar manner, with the proper description, stating if splayed. Enumerate the elbow caps, with description, and also passing and other pieces.

Boxings (per foot super.)—Take the height by the width for the two sides; describe the thickness, and if wrought, framed, rebated, and splayed; if the whole, they are denominated "perfect boxings."

Grounds (per foot super.)—Collect the lengths

from outside to outside by the width ; state the thickness, and if wrought, framed, beaded, mitred, &c. Should there only be a single moulding, take it by the foot run ; but if an architrave, the whole girth by the super. foot. Enumerate all mitres, pateras at angles and plinths, with sizes, and a perfect description of them.

Filling in Linings (per foot super.)—Collect the lengths by the width from the back of the grounds to the plastering, stating thickness, and if wrought, tongued, rebated, beaded, &c.


Outside Shutters (per foot super.)—Measure the width, adding the rebates ; if folding, by the height. State the thickness, number of panels in each fold, and if square, bead butt, or bead flush, on one or both sides. Enumerate the hinges by the pair ; state the sizes and description. Specify the rings and turnbuckles. Hanging stiles may be added to the width of the shutters.

Sliding Shutters (per foot super.)—Take the width between the pulley pieces by the height, including the passings. State thickness, how many panels, and if square moulded, bead butt or bead flush, on one or both sides, and how many heights they are hung in. Give a full description of the pulley pieces, beads, lines, weights, pulleys, &c., as before ; the boxings,

window backs, grounds, mouldings, or architraves, filling in linings, &c., as before. Measure the flap to cover the shutters when down; describe the thickness, and if wrought and beaded. Enumerate the notches for lines, beads, &c.; and also the butt hinges to flap, stating if iron or brass. Enumerate the thumb-screws, fasteners, and flush rings, with description and quality.

Doors, &c.—Refer as to hanging (mentioned in Specification); for if with rising hinges, the head rebate must be splayed as well as the door head; if the head-lining be not out of thicker stuff than the jamb, it is necessary for it to be ploughed, tongued, and rebated.

If grounds and mouldings are of different dimensions—thus, when door edges measure 16 feet—say jambs 16' 4", average 3"; grounds 16' 9", average 10"; mouldings 17' 6", average 1' 4". Dovetailed backings for hinges, usually six to each door, by the width required—if to partition (common), say 6"; but in all cases $2\frac{1}{2}$ " wider than the wall.

By "for proper door-case" is generally understood single rebate, and beaded on the rebated edge, and bead on the outside, thus— (with single bead). If either of the beads is a staff-bead, describe the work as such; if a transom for ventilator, describe it, with the

perfect door-case, and then calculate labour on rebate and beads. If a common door-case, and not beaded—as those in basement rooms—separate from proper door-case where same occurs.

Ledged Doors (per foot super.)—Specify the width, adding the rebates; if folding, by the height. State the thickness, number and width of ledges, and if wrought, ploughed and tongued, beaded, &c. If the whole, they are called perfect ledged doors. Number the cross garnetts by the pair, giving the length; the bolts, with their lengths; the thumb-latch and the lock, giving sizes, with a perfect description of them; as well as all ironmongery used thereon.

When moulded or difficult doors occur, take the doors as square, and specify moulding.

If in circular-headed wall, describe the jambs and head as circular, one or two edges, as the case may be.

Cupboard fronts and doors are measured together, allowing all extra labour, rebating, stops, as the case may be. State if jambs are back rebated for the grounds.

All folding doors are generally measured nett.

Grounds (per foot super.)—To the lengths of the jamb linings, if the grounds are 4" or more wide, add 7", by such width; state thickness; if framed, beaded, mitred and grooved or back

rebated for plastering. Mouldings round and architraves measured as before directed in the case of windows.

Jamb Linings (per foot super.)—Collect the dimensions from the external edge of the two sides and top of the door, to which add 6"; if $1\frac{1}{2}$ " thick, by the width; stating the thickness, if single or double rebated, beaded, &c.; and if with dovetailed or other blockings for hinges and lock.

Panelled Doors (per foot super.)—Take the width by the height; describe the thickness, how many panels, and if square, bead butt, bead flush, or moulded on one or both sides. If folding, add the rebate to the width, and state how many panels in each fold; if the panels are raised or feather-tongued, so describe them. Enumerate all butt hinges, per pair, giving sizes of same and lock, and mentioning furniture; if folding doors, the locks will be rebated. Enumerate the flush bolts, giving length and full description.

Door-Cases (per foot cube). — Collect the lengths; take the two sides, inclusive of the thickness of head and sill; to which add the length of head, inclusive of thickness of the two sides, by the scantling; also describe if wrought, framed, weathered, &c.

Seats and Risers, W.C.'s. (per foot super.)—

Multiply the extreme length of seat by the width, to which add the height of the riser. Specify the thickness; if wrought and tongued, and the number and size of all the bearers; measure the flap, the extreme length by the extreme width, stating thickness, if framed and beaded, with mitre-clamped ends; number the hinges, by the pair, giving size and full description; if a moulding under the projection of the seat, take it lineally. Add up the lengths of the skirting, multiply by height; describe thickness; mention all mitres, return ends, and beadings; number the hole for basin, also if same is beaded for handle.

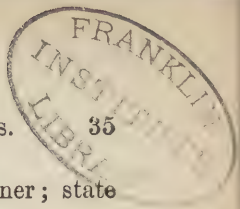
N.B.—The quality of the materials used make no difference in the calculation.

Seat and bearers taken whole width of closet under frame. Allow for labour to round edge, to seat, and to hole cut in seat; and ditto, where beaded for handle.

It is usual in good work to take moulded nosing or labour round seat, and cross ditto to the frame.

Leave a good space in dimension book for all charges for attendance on plumber.

Partitions (per foot super.)—Calculate the length and height (the skirtings and fascia are sometimes included in the price); state the thickness and the number of panels, and if square moulded, bead butt, or bead flush, on one



or both sides. Dwarf wall in like manner; state if any backings or battening, and run the deal beaded capping.

Staircases (per foot super.)—Take the length of the tread, include the housings into each string-board, by the width, to which add the height of the riser, say 11" and 7" = 1' 6". Count the number of steps, and multiply the dimension so many times, adding the additional riser, 7" in height; the lowest step, if longer, to be taken separately. Describe the thickness of the treads and risers, and if wrought and rounded, and the number and size of the carriages; state if glued and blocked, and if with moulded nosings; if mitred to outer string; also specify if dovetailed for balusters, also if circular on one or both sides. Take the winders square, adding the projection of the nosings, 1" each. Collect the lengths of the risers to winders (keep the fliers and winders separate). Winders having to be higher priced, quarter spaces or landings half-way up may be taken as fliers, and have added to them the top landings, as flooring, skirting, &c., with the room. If the risers are tongued at each edge, measure them—that is, the tonguing—by the foot run; if the winders are feather-tongued, so describe them. Enumerate the housings to each end of fliers, and also to each end of

winders. Enumerate the cut brackets to ends of fliers, with a proper description of them; also the circular ones. Enumerate the quarter curtains, stating if glued upright; also proper curtains, with the risers veneered. Measure fascias upon linings, &c., by the foot super., describing thickness and labour.

In the measurement, take flight by flight.

Fliers.—Take one step and riser (1' 6" generally), and take them so many times: where circular ends occur, extra.

Winders.—Take the quarter space to cover, and then add up the risers in their different lengths—the width to be taken from the top of one tread to the top of the next, in order to make good the part which goes under riser.

The housings are always measured in, or allow $\frac{3}{4}$ " each side, if close string; if cut string, allow $1\frac{3}{4}$ ". Specify housing fliers, allowing space. Housing winders, if three to quarter space, take two ends housed to newel.

String-Boards (per foot super.)—Measure the entire length, including framings, passings, by width. Wall strings are usually taken 1' 2" in width. Specify the thickness, and if plain, moulded, or wreathed; take ramps to all wall strings by lineal foot, stating if plain or moulded.

If framed, rebated, and beaded strings, take

the length, adding 12" at each end; state if sunk and beaded, or sunk and moulded, or if double sunk, or mitred to risers; measure level, circular, glued upright, to the girth add 4", by the mean width, describing thickness, and if plain sunk, sunk and moulded, and double sunk, solid wreathed, glued upright, or wreathed in thicknesses, properly backed. Take the girth with the additions, stating if plain sunk, sunk and moulded, or double sunk. If the opening of the well-hole is less than 16", it should be so specified, the circular parts being of greater value to smaller openings.

Planceer or capping to common strings measured lineally.

Handrails (per foot run).—Deal handrails measured by foot run, adding 2" at each end; describe the size, and if rounded or moulded, also if sunk for balusters, ramped, swan-necked, or level, or circular, solid wreathed, or with scroll. Measure the length by a tape, adding $2\frac{1}{2}$ " at each end, with perfect description. Measure the handrail on the centre of the top of the rail. Enumerate the moulded and mitred caps to handrails on the newels; also enumerate handrail screws.

Mahogany is measured in a similar manner. Where sunk for iron cores, measure the sinking by the foot run; describe it, straight or circular;

if the opening of the well-hole is less than 16", so describe it, as the value of the wreathed rails is greater in proportion to the dimension of the openings.

Newels (per foot run).—Take the height, inclusive of tenoning; state the size; enumerate the turnings, showing if single or double. If the newels are iron, specify and measure in like manner. Collect the fixing of iron newels, and the moulds for ditto.

Rail Newels.—Say if double or single caps; number short ramps, apron linings, return ends, balusters, nosings to landings.

In measuring rail in centre on top, allow 4' beyond springing of sweep for the circular parts.

A ramp is called swan-necked where it has to fall to join newel, and the term "wrythed" is used to describe the double ramp. It is best to give a sketch, and all figures of rail, and the number of iron balusters.

Enumerate ramps, joints, screws to rail, &c.

Number pendants, ends of rail to newel, notchings of strings to newel.

Very often landings are left to be taken with stairs; if so, care should be taken that the joists for ditto are provided for, as also the skirtings, with the return ends.

In describing strings, say if with backings.



Enumerate ramps, &c. All winders measured nett.

Balusters (per foot run.)—Take height, inclusive of tenoning; describe the size; if nailed one or both ends, or if dovetailed; if iron, take them in like manner, and bring into weight.

Enumerate the fixings of the iron balusters and the mould.

Quirked Deal Mouldings (per foot super.)—Take the lengths by the girths, and make a super. dimension; if they are under 5" girth, take them lineally.

Enumerate all mitres and housings, and give girths; say if straight or circular.

Generally.—It is suggested that in all moulded or enriched work, whether by Joiner, Mason, or Plasterer, a detailed figured sketch be given in dimension book, with the girths and other particulars of same. In valuing the work, it is handy to refer to the sketch, more especially in the two last trades.

SMITH.

Wrought Iron (per foot super.)—Measure all chimney bars, including turnings up; also ties; straps by the width, and what thickness. For weight, calculate 5 lbs. to the foot super., $\frac{1}{8}$ " thick, as in the case of a chimney bar, 6' long, 3' wide, and $\frac{1}{2}$ " thick.

For Bolts, &c.—Take the super. contents of all nuts, plates, &c., describing the several thicknesses.

Screwed bolts, ties, &c., to be so described, being more expensive.

Cast Iron (per foot cube).—Find the cubical contents; calculate the weight, allowing 466 lbs. per foot cube.

Enumerate all patterns for girders, columns, &c.

Wrought-iron bolts to girders are measured as before described to wrought iron.

Rainwater Pipes and Eaves' Gutters measured by foot run (which may easily be brought into yards), giving full description, and stating quality.

State number of cistern heads and shoes; say size and description.

Enumerate stopped ends to gutters; also

brackets, size, and description. Should a length be cut, charge for it.

Measure by the foot super. all lead for bearings, &c., carefully calculating the same.

Rainwater Pipes.—Measure for the height the number of 6 feet lengths; if it is necessary to cut a length, charge accordingly. If nett dimensions are taken, add 6" in each; allow for passings. When used for soil or wine pipes, charge for cement joints.

Enumerate heads and shoes; if any angle heads, separate them.

In the case of eaves' gutters, calculate the passings, say 5" in 6 feet. Should a length require to be cut, provide for it, say 16" each way from the angle, and state if including brackets.

All corbals and gratings should be mentioned, and the weight and description given.

Ties for floors and roofs are measured as so many feet of iron of the specified substance, and reduced to 42 lbs. per inch.

All staples and dog-nails are enumerated. Two staples and two dog-nails weigh $2\frac{1}{4}$ lbs., and usually one staple and two dog-nails to each tie.

Screw bolts,—as a principle, 9" screw bolts; all above, bring into weight; all under, specify. Measure by the foot run from the inside of the nut to its end.

Measure or allow for the head separately, taking for $\frac{3}{4}$ screw bolts, 12" long, $1\frac{1}{2}$ lb. for head and nut.

$\frac{3}{4}$	„	15	„	$1\frac{3}{4}$ lb.	„
1	„	12	„	$1\frac{1}{2}$ lb.	„
1	„	15	„	$2\frac{1}{4}$ lb.	„
1	„	18	„	2 lb.	„
1	„	21	„	$3\frac{1}{4}$ lb.	„

A plain Staircase Railing.—Run baluster; include letting into step by diameter, say $1\frac{1}{2}$ " = 3 lbs. per foot run.

Handrail, say $\frac{3}{4}$ " half round, $1\frac{1}{4}$ " wide = $3\frac{1}{2}$ lbs. per foot run. Measure handrail and baluster separately; state how many feet run; if a wreathed or straight rail, as the case may be.

Enumerate screws and riveting bars to rail.

If a wood rail, take all holes and counter sinking to screws.

A wrought newel to be weighed and put in with bars, if only common round stout bar; but if an ornamental turned newel, make separate item, with core, cap and screw through bottom step.

Outside railings should be brought into foot run, and the weight made out; state if wrought or cast; show by a sketch.

Gates taken extra, fastenings being measured in with railing. All extra lead for joints (see directions under the head of "Mason").

MASON.

All the working drawings should be produced at the time of measurement, as from them much may be gathered. All stone should be measured on one uniform principle.

Calculate the cubical contents of the stone as it comes in from the banker; take sawing by the foot super., to soffits of steps, to landings and balconies, and everywhere where the stone is not left rough or worked. State amount of labour to plain bed, and to all and every description of faces, sunk or circular. All moulded work by the foot super.

Throat grooves, dovetailed grooves, back joints, narrow splays, &c., rebating, cutting, and pinning, by the foot run.

Specify by separate items, cramps, plugs, mortices, &c.

If any stone is above 6 feet long, take the cubical contents, and describe it in scantling lengths.

If any stone is hoisted above 20 feet, take the cubical contents and describe it as "hoisting," stating height.

Measure sawing by the foot super., to back of strings, cornices, &c., where not in the rough.

Cornices, Strings, and Blocking Courses.—The

cubical quantity should be ascertained that will be required to be cut out of the various stones.

In rectangular stones laid with vertical and horizontal joints, it is not needful to provide preparatory faces.

In almost every case the beds and joints are taken as plain work.

To strings and sash stones that are backed up with brickwork, provide sawing for the back, and also for the bed when laid on brick; and if a string course with brickwork above, the bed should be doubled. If the face of it be moulded, take it as sunk; but if only plain, take a super. dimension.

Architraves and like stones follow in same manner, providing bed and joint, and state how worked. The back will be half plain work if against brick; the face as it may be.

Cornices.—The bed only to be taken to the face of the bed moulding, where it begins to overhang the top. If weathered before a blocking, take the sunk work, and then if the moulding is not a very large one, take the rest as moulded work.



The plugs and lead and joggles must be numbered. Backings are worked fair all three sides; girth as plain work; take beds and joints.

Columns.—Measure two plain sides, and say

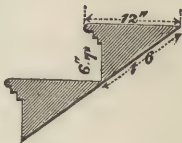
plain work, but on the above principle, calling them preparatory faces; the four sides should be taken. If fluted columns, state so.

Stone Staircase, 4 feet nett going; spandril steps; say the bottom step a solid step.

Feather-edge moulded step, 4 feet long; take $\frac{2}{3}$ of the rise.

No mitres to mouldings.

Allow for labour. Specify all mortices.

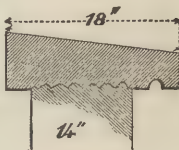


Window Sill, 4 feet 6 in.

long.—Allow for labour and sawing, and for this it is suggested to refer to a current Builders' Price Book.



Coping, say 6 ft. long.—Specify all cramps and plugs, giving sizes and quality of metal, and mortices for ditto, a like description.



Winders.—Each step should be taken as if square; for width, take measurement on the radius line. Specify sunk, circular, or other ends, also if ends of winders pinned.

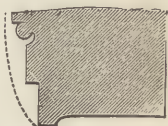
Landings.—Make mem. of fair edge next well-hole; say $4\frac{1}{2}$ wall-hold for landings; cutting and pinning to walls; lead or cement joggles; stone provided before, say $1\frac{1}{4}$ ft. wide. Holes for newel and balusters. Say how ends are finished.

Rough or Back Staircases.—Measure run of steps, allowing 9" for wall hole, describing either as spandril or solid, and specify soffit and winders separate.

Blocking Course, say 4 feet long.—Calculate the cubical contents of stone used, then measure for sawing and other labour required; specify plugs and mortices, &c.



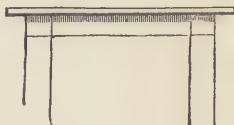
Moulded Cornice, say 6 feet long.—Specify labour to all faces, labour for sawing, and refer to current Builders' Price Book for value.



String, say 6 feet long.—Find the cubical contents, then allow for labour, and refer to Builders' Book as before directed.



Plain Chimney.—Measure for mantel, say 11 feet. Ditto for jambs. Ditto for edges. Ditto for soffit, and rounded corners, and chimney cramps.



Area Curbs.—Make two items, stone and labour; this is better than running the curb, and then providing for labour. Provide stone; labour to three faces; bed to underside of all

stones; allow for plugs, and lead caulking holes, and all gratings.

Templates —Labour to edges, front and side. Number all caulking holes.

Bases.—If out of landings, provide the plain edges all round; if sunk as required for columns, provide cogging holes; if in block, stone, or granite, take separate items of labour.

Cores.—In the case of cornices and iron girders measure the front edge $1\frac{1}{2}$ " thicker than the stone; allow for inside edge.

Slabs and Hearths.—Take the length and width; state how worked, and notches.

Box Chimney Pieces.—Measure as before directed, including all steps; height by width; run all edges to ditto; run all yoke bar and rough lining; mantel and jambs; for the moulded works, lengths by girths; enumerate the turned ornaments and plinths, giving description and sketch of same.

Chimney Pieces are frequently priced as a whole.

Granite is always measured by the cubic foot, except the moulded work.

The following are measured by the lineal foot: all grooves, splays, rebates, and cutting and pinning. Holes, plugs, &c., to be numbered, and labour calculated for each item.

Enriched Mouldings (per foot run).—Add up

the lengths, describing the moulding, girths, &c. giving sketch of each. The cubical contents of all stone previous to its being in the hands of mason, carver, or sculptor, should be taken. Specify all enriched mitre leaves to mouldings, giving the sizes, description, and a sketch. Enumerate all dentils, with sizes and intermediate space, describing whether fixed on a bevel or other line. Specify all enriched pendants, with size, description, and full sketch. Particularise all moulded balusters, and half ditto, with full description and fair sketch; specifying if turned, or worked, chamfered, &c. Specify the mortices for ditto, giving sizes and depths cut in. Enumerate all consoles, with perfect description of moulded fronts and caps, and show sketch.

Number enriched profiles, or enriched leaves, top and bottom, and show by sketch.

Enumerate all enriched capitals, specifying order, and giving sizes and sketch; also all enriched blocks, pateras, &c., with size, description, and full sketch.

Specify all mitres to plain and enriched cornices, giving the girths; also the stopped ends; particularise all mouldings, no matter how stopped.

Yorkshire and Purbeck Stone (paving per foot super.)—Multiply the length by width, giving

the thickness. Should the plan be irregular, take the average, and run the cutting on any line it occurs ; say if tooled or rubbed, &c.

Sinks (per foot super.)—Give description and number, and the size and thickness ; how much sunk, and how many holes.

Multiply the length by the width ; add what they tail into walls ; give thickness ; if tooled or rubbed, and how much sunk ; measure pipe hole, and describe how cut in ; say how many rounded corners ; measure cutting, &c., per foot run.

Landings (foot super.)—Multiply lengths by widths, adding the bearings on the walls ; state thickness ; if faced, tooled, or rubbed on both sides ; take cutting and pinning by the foot run ; if above 40 feet super. in a stone, mention same.

Coping (per foot run).—Measure length, width, and thickness ; state whether self-faced, tooled, or rubbed ; if parallel, feather-edged, and if throated.

Steps (per foot run).—Take the length ; state width and thickness ; if tooled or rubbed ; if solid, feather-edge, or otherwise. If more than one step, take length of back joint.

Sills (per foot run).—Measure length, width, and thickness ; say if worked in quarry, or rubbed and sunk, and if throated.

The following should be specified :—

Mortices, giving size and depth ; iron gratings, cramps, or any plugs.

All back joints, back rebates, or joggles to steps, joggle joints, cuttings, and any pinning, to be measured by the foot run.



PLASTERER.

Measure the ceilings, with the additions and deductions, first; then the cornices, the rendering to the walls, with additions and deductions, the lath and plaster to partitions and walls; afterwards all quirks, beads, soffits, margins, &c., &c.

Keep outside and inside work separate.

In all inferior work measure ceilings from floors, and walls from skirtings, and afterwards the blanks above doors and windows, added up; strings to stairs separate.

Walls on Brickwork are always to be measured from top of grounds to foot of cornice.

Walls on Lath.—Measure height from grounds to cornice, adding $\frac{3}{4}$ vertical height of cornice, stucco $\frac{1}{2}$.

Render set (per yard super.)—Take lengths of walls, adding projections of chimney breasts; multiply by height from the top of skirting to ceiling; take all additions and deductions; state of two coats and set.

Floated (per yard super.)—Measure in like manner; take the height from the top of the floating, grounds to the underside of the cornice,

adding half the height of cornice on to wall line ; deduct doors and windows.

Lath lay, and set (per yard super.)—Multiply length of all ceilings and strings by the width, deducting the chimney breasts, &c. ; describe if two coats and set ; partitions with heights, as render set ; run all quirks cut to wooden beads or others.

Ditto, floated (per yard super.)—The same way as ceilings, but take off one projection of the cornice one way from this dimension ; take the length of the cornice. Partitions, width by heights, as floated, render set.

Trowelled Stucco is measured same way.

Coves (per yard super.)—Floated lath and plaster set in coves to be measured, taking any projections each way, and multiply by girth.

Soffits, Bands, Margins, &c. (per foot super.)—Multiply the lengths of each by the width, describing whether straight or circular, on brick or otherwise ; if narrow, take them by the foot run, stating the width, and also if on brick or otherwise.

Quirks, Beads, Bends, and Double Quirks.—Measure these by the foot run, describing if on straight line or not.

Cornices.—Find the lengths from the dimensions of the surface of ceiling to floated work, to which add breaks of chimneys, by foot super. ;

if under 8 in., by foot run. Enumerate all mitres, giving girths.

Mouldings are calculated from actual girth of cornice, faces on walls for ornamental friezes or ceilings; all ornamental soffits taken with mouldings. In a room 10 to 12 feet square all mitres are allowed in price.

Pilaster Caps and other difficult mouldings are usually taken with the general bulk of mouldings.

Mouldings in external work.—Taken as other mouldings. Allow extra for dubbing to cores and any projections. Enumerate the mitres and all moulded ends. Take all jointing with work.

Enrichments.—Add up all the lengths and take by foot run, describing all the girths, and giving sketches. State if under-cut. Enumerate all mitres, giving the girths.

Chimney Backs (per yard super.—i.e. feet reduced to yards).

Cement Skirtings (per foot super.)—Multiply the rounds by height; take arrises to any angles per foot run on narrow top; describe if dubbed out with plain tiles or otherwise.

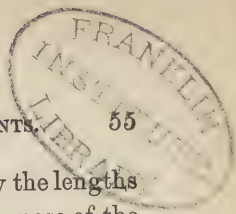
Lime Work is measured by yard super. Collect the dimensions round walls and multiply by height; take all additions and deductions, but add the reveals; divide by 9 (to bring to yards), and describe how many times has been done.

Whitening, Colouring, &c.—Multiply lengths by widths of ceilings, deducting chimney breasts. State how many times has been done. Collect the round of the cornices by the foot run. If enriched, state how many members, giving sketch; if distempered, say how many tints; also specify how cornices are finished. The whitening and colouring when performed to new work can easily be taken from the totals of plastering dimensions.

Externally.—Roman Cement, Atkinson's Metallic, Blue Lias, Hamelin, Mastic, or any other:—

Plain face, coloured—Should the whole front be covered, multiply the length, including breaks and returns, by the whole height, inclusive of projections for plinths, strings, fascias, &c., but not behind large cornices; then make all the additions appearing, and deduct the doors and windows and all other apertures, but adding all reveals. Collect all arrises to angles, plinths, strings, reveals, &c. Describe if on brick or on lath, and colouring and jointing. If only plinths, strings, &c., are executed, take all lengths, and multiply by widths, on face only, and the returns, &c. as narrow margins, &c., and arrises by foot run.

Rendering to Parapets (per yard super.)—Multiply length by height, and then calculate by foot run.



Cornices (per foot super.)—Multiply the lengths by the girths, adding $1\frac{1}{2}$ in. beyond the nose of the mould to the girth, the top to be taken as plain face; if the moulded cornice is under 8 in. girth, run it, describing girth; run all enrichments to mouldings, with girths, description, and neat sketch. State number of mitres and stopped ends, giving girths.

Consoles, &c., &c.—Specify all dentils, blocks, flowers, &c., giving the sizes and fair sketch; describe the moulded fronts and caps to consoles, with enriched leaves, both top and bottom, and enriched profiles; give true sketches of each, showing sizes and profile. Circular mouldings to be run and priced from a Builder's Price Book.

PLUMBER.

This work is very seldom measured except when an account is disputed.

Calculate the lead by the foot super., as cut and laid, and then bring it into weight.

Flats and Gutters.—Multiply the lengths, including all turning up, the lead round the rolls, &c., by the width it is cut and laid, including the turning up under the slating and flashings against brickwork. State quality, and weight of lead, per foot.

Cisterns and Sinks.—Take in same way, including all taps, &c.; take soldering round bottom, and to angles, by foot run—1 ft. 3 in. taking 1 lb. solder.

When lead is broader at one end than the other, the average only to be taken.

Enumerate all lead-headed nails, soldered dots, and well-holes.

Pipes.—By foot run, describing sizes and quality.

Brass Taps.—Specify, giving full description, and if with screw bosses, &c.; number the soldered joints.

All valves, cranks, service-boxes, and other items of a similar nature, should be numbered.

GLAZIER.

Crown Glass (per foot super.)—Measure from rebate to rebate. State whether best seconds or thirds. If above 3 feet super. keep separate. Take irregular panes by the average width.

If ground or circular, keep distinct.

British Plate.—It is advisable to take each separate, except where many are of same dimensions.

Embossed or Coloured ditto.—Measured from putty to putty. Take any margins by foot run, describing width.

State how many corners, and give sizes.

PAINTER.

Generally.—Measure wherever painted, allowing all returns, panels, &c. &c., giving number of coats, finished tint, and if flatted; also if in two tints. Should the mouldings be cut in, collect them by foot run; if clearcoled, specify same; if on new plastered walls, describe same.

All painting should mean and include knotting, stopping, preparing, &c. Narrow widths under 14" and having two edges, cut in and taken by foot run.

Door Faces (per yard super.)—Take the width of the door, including the architraves and returns, adding $1\frac{1}{2}$ in. for every panel, by height, from the floor to the top, inclusive of architrave and any grounds. Collect the lengths of the jamb linings, by widths, adding rebates and thickness of door; if both sides of the door are painted alike, just double the dimension.

Wainscotings, ditto.—Multiply length by height, adding 1" for all panels, &c. in the height only.

Window Fronts.—*Boxing Shutters, &c.* (per foot super.)—Take the width, including the returns, dead to the wall, by height from floor to top,

adding any projection that may occur; take the height of shutters by the width thereof, adding 2 ft. 6 in. to it for the edges inside of boxings, &c. Collect the whole dimensions of round of elbow, back linings, and soffit, adding 9 in. for the elbow caps, by 10 in. in width.

Calculate sash squares by the dozen; specify coats. Ditto for shutter bars.

Wainscot Sashes.—Wainscot or mahogany sashes cleaned, sized, and varnished. Enumerate the squares, also sets of moulded beads.

Sashes and Frames are numbered; stating how many coats, and if flatted.

Reveals.—Take the heights and soffit by foot run.

Cornices (per foot run.)—Collect the round; if above 14 in. girth, take them by the foot super.; if under, by foot run. Particularise if carved or enriched; add one-third.

Stone String (per foot run.)—As stone string, say how many mouldings. Coping edge, &c.

Trunks (per foot run.)—Add up the lengths of rain-water trunks, pipes, eaves, gutters. Add 2 ft. 6 in. for cistern heads, and 18 in. for shoes; say how many brackets.

Skirtings (per foot run.)—Take the dimensions of rooms; describe if square or moulded. String-boards, hand-rails, newels, balusters, apron

linings, and base mouldings, are also measured in similar way.

Sills are numbered.

Iron, or any other description of railing, measured as square work ; collect length by heights , if painted all round, double the dimension. All bars, brackets, scrapers, &c., are to be numbered.

IMITATION OF WOODS.

Wainscot Oak and Mahogany (per foot super.)
—Taken as before described, stating what it is, and how many coats of varnish, with quality; if the panels are cross-banded or lined, or the moulding, &c., in any other imitation of wood, charge by foot run.

The same quantity of work for the under coat for graining should be added to common painting.

Imitation of Superior Woods (per foot super.)—Bird's-eye maple, satin, walnut, pollard, oak, yew, &c., by foot super., adding ground colour; if the edges are cross-grained, and the rebated portion of jamb linings. Where one face only of the door is done, take by foot run.

All imitations of marbles in like manner. Be particular in giving the number of coats of varnish, Hand polish by superficial foot.

Tarring.—By the yard super. Say how many times done.

PAPERHANGER.

Per piece.—Multiply the round of room by height, with all additions and deductions of doors, windows, &c. ; divide by 9 to bring to yards, and again by 7 to bring into pieces.

Lining paper in same way ; except that in satin and other expensive papers, divide by 6 instead of 7, as there is more waste in those papers.

Borders.—Calculate by dozen yards run.

Preparing Walls.—Collect whole number of pieces, and describe them as walls prepared, sized, and pieces of paper hung.

GILDER.

Black, Gold, or others.—By the lineal yard, stating girths ; describe as fixed with needle or other points, &c. Number blocks or corner ornamentations, with sizes, description, and sketch.



ABSTRACTING.

All abstracts should be clear and distinct; the columns sufficiently wide to admit of a proper description to each head; and when there are several heads in the same column, they should not be too close, otherwise you are likely to get confused in making out the bill. The following rules are recommended:—

Excavator, Concrete and Bricklayer.—On the left of the abstract take 4 columns for excavation, digging, &c., to trenches; at the lower part the concrete will come in. For the bricklayer take 3 columns for 1 brick, 2 for $1\frac{1}{2}$ brick, a column for cubicals, and 2 or 3 for deductions; 3 columns for extra only in cement. At the lower part of these columns all may be consolidated and brought into rods of reduced brickwork, following with 2 columns for brick-nogging, and 2 columns for paving, of which there may be several descriptions; 4 or 5 columns for superficieses, as cut faces, &c., &c.; 3 or 4 for running articles, and 3 or 4 for articles enumerated separately.

Slater may be introduced at some part near the bottom, and kept distinct; cuttings added.

Carpenter.—Take 4 columns for squares, as

batten work, rough boarding, &c.; 4 columns for wall-plates, wood bricks, lintels, &c., to be consolidated; 2 for framed timbers, 1 for trussed ditto, 2 for wrought and framed, 1 for oak, 2 for centering by square and super. foot; follow by 3 or 4 for thicknesses, 2 for super. dimensions, or 4 for running articles, &c.

Smith.—Keep distinct wrought and cast iron—bring into weight.

Mason.—Keep each sort of stone separate; 2 columns for cubicals, scantling lengths, hoisting, &c.; 1 for plain face, plain bed, and circular face; 1 for sunk face and circular ditto; then leave a spare column; follow by 3 for running articles; then 3 or 4 for numbers.

Plumber.—Provide 4 columns for 4, 5, 6, and 7 lb. lead; at the lower part they may be calculated and brought into weight.

Keep cisterns and sinks separate.

Joiner and Ironmonger.—These items in particular should be clear, distinct, and properly billed. Take 2 columns for cubes, door-cases, oak sills, &c.; 3 for the various floors, 3 for skirtings, 2 for sashes and frames, 3 for shutters, 2 for jamb linings, 1 for grounds, 2 for framing, wainscoting, &c.; 3 columns for $\frac{1}{2}$ in., 4 for $\frac{3}{4}$ in., 5 for 1 in., 4 for $1\frac{1}{4}$ in., 5 for $1\frac{1}{2}$ in., 3 for 2 in., 1 for $2\frac{1}{2}$ in., and 1 for 3 in. deal; 2 for mouldings.

Plasterer.—For internal work take 3 columns for whitening, colouring, &c., for wall work, as “render set” “two coats and set;” 3 for lath work, as “lath lay,” and “set lay,” “two coats floated lay;” 1 for stucco on brick, 1 for cornices, &c.

For external—1 column for plain face, 2 for superficiais, 1 for general mouldings.

Glazier.—Keep each quality in a separate column, with the larger sizes below each—each glass distinct.

Painter.—Give plenty of space, the same number of heads being requisite for each coat of oil and colour; also for flatted work; 3 columns for running articles.

Paperhanger.—Keep each priced paper separate, and bring into pieces on abstract.

Gilder.—Abstract according to girths.

HINTS FOR COLLECTION OF QUANTITIES.

It is suggested, in the first instance, that the drawings and specifications be carefully studied, and remarks made for future guidance or reference.

Excavator and Bricklayer.—Take the dimensions for the excavations wholly from plans and sections; then refer to the Specification, and add whatever does not appear on the drawings.

Take brickwork as above directed.

The chimney bars may be taken with the dimensions of the breasts,—refer to Specification for description.

The centering and spring pieces may be taken with arches.

The wood bricks and springing pieces may be taken with brick arches.

Take dimensions by the foot run of the making good and restorings of all stone sills, after mason, &c.

Slater.—Take from the plan of roof and section; then refer to Specification and clear all off.

In the bill provide for leaving all slating perfect at completion of the work.

Carpenter.—Take from plans and sections, referring to Specification. Take all smith's work attached to timbers. Find the quantity of boarding, or battening, to roof, with the slating, deducting eaves, cuttings, &c., from the latter; if much discrepancy, there must be an error.

Plumber.—Take everything from Specification, referring to drawings only for lengths. Be careful in allowing all turnings up under slating and against walls, round rolls, flashing, &c. (refer to the quantity of boarding to flats, &c., as a check).

Mason.—Take from Specification, referring to the drawings only for dimensions. Attend to the cube quantities, scantling lengths, &c.; also to the method pointed out for taking labour.

Joiner and Ironmonger.—Peruse Specification, referring to drawings only for dimensions. Take ironmongery from floor to floor. Provide for casing stairs, and covering handrail, to prevent any injury during the progress of the work; and for protecting masonry in like manner.

Provide for attending plumbers to sinks, cisterns, W.C., &c., stating how many of each.

Plasterer, Internally.—Look carefully to Specification, particularly as to enrichments, referring to drawing for dimensions. Whitening and colouring is taken from plastering, but appears separately.

Provide for making good round mantels after mason.

Glazier.—Can find all in Specification, referring to drawings for any size. Check quantity of glass by the sashes, allowing for wood. Provide for leaving same clean and sound.

Painter.—All taken from Specification.

All the woodwork painted may be collected from the joiner; one-seventh for edges; when both sides are painted, double dimension. Painting for plastered walls, from plasterer.

Paperhanger.—May be taken from plasterer.

Summary of trades in order. Conditions of contract to be taken from Specification, and furnished in the Memorandum Sheet.

Fees.—Parliamentary, parochial, sewer, and architect's fees to be attached at end.

At the head of each trade give fair description from Specification of quality of materials, &c.

Lastly.—Generally review the whole of the drawings and Specification, that nothing may be omitted or misrepresented.



PRICES FOR ALL WORK IN THE BUILDING TRADE.

1874.

EXCAVATION.

	<i>s. d.</i>
Digging in ordinary soils, not more than 6 ft. in depth per cubic yard	0 7
Ditto, above 6 ft. in depth, and not exceeding 10 ft. „	0 8
Ditto, above 10 ft. and not exceeding 14 ft. in depth „	0 10
In heavy soils, allow extra „	0 1
Preparing for foundations, including filling in and ramming „	0 10
Reducing the ground to the required level, the average depth not to exceed 12 inches . . per yard super.	0 4
Filling and wheeling ground, clay, or gravel in barrows, 20 yards run, or less	0 3
Ditto, for every other 20 yards, or part of a run beyond the first 20 yards	0 2
Carting and shooting, or delivering ditto, not exceeding 1 mile per cubic yard	2 0
Ditto, for every additional mile or part of a mile. . .	1 0
(Tolls, if any, to be charged.)	
Calculate wells, not exceeding 8 ft. in depth, at per ft. run— <i>i.e.</i> on the depth.	

	s.	d.
Digging and steining dry, in half a brick (stocks), 4 ft. 6 in. in diameter	7	3
Ditto, 5 ft. 3 in. „	8	3
Dressing and placing soil on slopes of embankments, and all cuttings per super. yard	0	2½
Forming bank and ditches per yard run	0	6
Planting quickset, labour only „	0	2
Felling, carting, and shooting within a mile of the work per load	3	6
For every additional mile add	0	6

WELL-BORING.

	s.	d.
Boring, using 3½ in. auger in soft soil, inclusive of all tools and necessary tackle, <i>not pipes</i> , per foot lineal:—		
1 ft. to 10 ft.	0	5
11 „ 20 „	0	9½
21 „ 30 „	1	4

CONCRETE.

	PER CUBIC YARD.		
	£	s.	d.
Concrete should be composed of the best Dorking greystone lime and ballast above-bridge, in the proportion of one of lime to six of ballast, and thrown in while hot from a height of at least 10 ft. Including wheeling and filling in . . .	0	8	0
Ditto, if composed of blue lias lime ground . . .	0	8	6
Concrete walls mixed with ⅓ of Portland cement, per rod.	9	17	6
Apparatus charged by foot run	0	8	6

BRICKWORK.

	£	s.	d.
Brickwork all stocks, and mortar composed of Thames sand and stone lime, the joints of mortar not to exceed $\frac{3}{8}$ of an in. in thickness per rod	16	2	6
If in cement, add „	3	0	0
Brickwork of place bricks and mortar . . „	15	2	6
Brickwork in stocks and Roman cement, the sand and cement in equal proportions . „	19	9	0
Brickwork in stable buildings and garden walls, when worked fair both sides and jointed, add . .	0	9	0
If old bricks, add	0	16	6
Should the work be circular on plan, add per ft. super.	0	0	1 $\frac{1}{2}$
For pulling down old work, cleaning bricks and stacking same, including scaffolding . . per rod	2	7	6
Ditto, without scaffolding „	1	3	0
One course of a brick on edge in cement per ft. run	0	0	3 $\frac{1}{2}$
If in 1 $\frac{1}{2}$ brick „	0	0	5 $\frac{1}{2}$
Foot tile coping set in cement . . . „	0	0	7 $\frac{1}{2}$
Cuttings to ramps and rakes . . . per ft. super.	0	0	3 $\frac{1}{2}$

BRICKNOGGING, measured solid :—

	On edge.	Flat.
	s. d.	s. d.
Place bricks per yard super.	3 2 ..	4 3
Stock bricks „	3 10 ..	4 10
When worked in cement, add	0 9 ..	1 0
ARCHES—of stocks per ft. super.	0	7
„ of malms, or red bricks, segment or semi-circular, gauged or rubbed „	3	0
„ elliptical „	4	0
„ if circular, add	1	10

PAVING.

The following prices include the preparation of the ground in all ordinary cases.

	PER YARD SUPER.								
	Sand.		Mortar.		Cement.				
	s.	d.	s.	d.	s.	d.			
Stocks, flat	3	0	..	4 0	..	4 3			
„ on edge	4	0	..	5 2	..	5 10			
Malm paviments, flat.	4	3	..	4 10	..	5 7			
„ „ on edge	5	6	..	6 5	..	7 4			
Suffolk white bricks, flat	6	2	..	7 0	..	8 0			
„ „ „ on edge	9	0	..	9 9	..	10 7			
Paviments, flat	4	0	..	4 6	..	5 8			
„ on edge	6	0	..	6 8	..	7 9			

PANTILING.

	£	s.	d.
Laid dry, bedded in hair and mortar . per square	1	7	3
Pointed outside, filleting and heading included „	1	10	0
Heading to dry work per ft. run	0	0	3½
Hip hooks and nails, painted each	0	1	0
T nails „	0	0	2½

PLAINTILING.

	£	s.	d.
On fir laths and wrought nails, showing 4 in. on face per square	2	5	0
On oak laths, add	0	1	9
Barge per ft. run	0	0	2½

BUILDER'S PRICES.

POINTING.

Include all scaffolding, raking, and cleaning-off.

		s.	d.
Flat joints to walls, in mortar	per ft. super.	0	3
Ditto to shafts, in cement	"	0	4
Ditto to dwarf walls	"	0	3

PAVING IN ENCAUSTIC TILES.

	Glazed.		Unglazed.	
	s.	d.	s.	d.
Figured buff and red	2	6	2	2
Figured seconds	1	8	1	2
Figured buff and black	2	10	2	4
Plain buff, red, or black	1	10	1	7
Plain seconds	1	0	0	10
Ornamental letters for doors . . . each	..	..	0	9
Gulley tiles, white, set in plaster per ft. super.	..	..	2	2
Blue and white best . . . . .	..	..	4	10
Urinals in wedgwood ware, 20 in. by 10 in.	..	..	16	0
Angular urinals . . . . .	..	..	14	6
For fixing, add . . . . .	..	..	3	4
Border tiles per yard lineal, tiles 6 in. by 6 in.	..	..	2	10
If 8 in. by 4 in. . . . .	..	..	..	..

SLATER.

	£	s.	d.
Ladies' zinc nails per square	1	9	0
Countess' „ „	1	12	0
Duchess' „ „	1	15	0
Queen's „ „	1	18	0

Cisterns complete, of 5 pieces 8 ft. long each, including bolts,
per ft. super., in 1 in., 1s. 10d.; in 1½ in., 2s.; in 1½ in., 2s. 6d.

SLATE STEPS PER FT. RUN.

	1 in.		1¼ in.		1½ in.	
	s.	d.	s.	d.	s.	d.
Steps 10 in. wide and risers 7 in. high	1	4	..	1 8	..	1 10
„ with risers let into grooves	1	9	..	2 2	..	2 8
„ with rounded nosing	2	0	..	2 6	..	2 10
„ with rubbed face, per ft. extra	0	2	..	0 2	..	0 2
6 in. slate skirting, ¾ in. thick per ft. run					0	7
9 „ „ „ „					0	9
12 „ „ „ „					1	1
Slate sinks 4 in. deep inside, per foot					1	9
„ „ „ rubbed					2	0
„ „ „ out of solid.					2	7
Patent ribs and cement per ft. run					1	1
Williams' patent slate ridge „					1	1
Robinson's slate ribbing, 6 in. wide each side					0	7
„ „ 7 „ „					0	8
Roll medium size, 6 in. wide, fixed complete					1	2

CARPENTER.

Timber in scantlings, per foot cube.

QUARTER PARTITIONS—Labour and nails:—

	4 in.		5 in.		6 in.	
	s.	d.	s.	d.	s.	d.
Common partitions . . per square	4	2	5	1	6	6
Ditto, framed and braced „	6	0	7	0	7	10
If with Queen posts and enterties .	11	6	12	10	15	8

Roof—Labour and nails (not exceeding three stories):—

Common shed or lean-to per square	5	6
Ditto with purlin „	6	6
Ditto, span „	7	0
Ditto, span with purlin „	8	0
Framed ditto, collars and principals . . . „	11	0
Common curb, including plates „	8	0

GUTTERS AND BEARERS:—

$\frac{3}{4}$ in. deal eaves board per ft. super.	0	5
1 in. deal gutters and bearers „	0	8
$1\frac{1}{4}$ in. ditto „	0	9
When circular on plan, add.	0	3

SLATING AND WALL BATTENING.

Fillets, &c., extra.

	$\frac{3}{4}$ in.		1 in.		$1\frac{1}{4}$ in.	
	s.	d.	s.	d.	s.	d.
Battens $2\frac{1}{4}$ wide, 9 in. from centre						
to centre	12	9	15	0	17	0
Ditto, 12 in. ditto	11	0	12	0	14	0
Ditto, 15 in. ditto	10	9	11	9	13	3
Ditto, 3 in. wide, 9 in. from						
centre to centre	15	3	17	6	20	0
Ditto, 12 in. ditto	13	0	14	6	17	0
Ditto, 15 in. ditto	11	9	13	0	15	3
If to ceilings laid crosswise, add					1	7
Quarter battenning, 3 by 2, and 12 in. apart					20	0
Ditto to window fronts					20	0
If 4 in. by 2, add					3	9

BRACKETING.

Including pugging (calculated by super. ft.).

	s.	d.
To cornices and coves of $1\frac{1}{2}$ in. deal	0	9
Ditto, circular	1	$1\frac{1}{2}$
Narrow circular soffits	1	0

CENTERING.

The price entirely depends on the quantity of work executed.

	£	s.	d.
Common to vaults, per square	1	5	0
All groining at per foot run, extra	0	1	1

FLOORS PER SQUARE.

Girders, tie-beams, binders, and like work to be taken and charged separately.

	Labour and Nails.	
	s.	d.
Common ceiling floor, joists only	6	7
Framed ditto	8	4
Ditto with tie-beams and binders	9	8
Single framed floors trimmed to apertures	10	4
Ditto, above 9 in. deep	12	0
If trimmed on party wall or framed in girders, &c., extra per square	2	9
Framed floors complete	26	0
Ground joists bedded only	5	6
Ditto pinned to plates and framed to apertures	8	0
Trusses put on girders, by foot run	0	9
Kings and queens, each	4	10
Girders trussed, one side, per foot run	0	9
Ditto, both sides	1	6
Girders sawn, reversed, and bolted	0	9

Add $\frac{1}{3}$ if oak or elm (all cases).

JOINER.

All Materials and Labour.

FLOORS.	PER SQUARE.								
	Spruce.			White and Yellow.			Red Yellow.		
	£	s.	d.	£	s.	d.	£	s.	d.
$\frac{3}{4}$ deal, rough, edges shot .	1	5	0	1	9	0	1	13	0
Ditto, wrought & laid folding	1	8	0	1	11	0	1	14	0
1 in. deal, rough, edges shot	1	10	9	1	15	0			
Ditto, wrought & laid folding	1	15	0	1	18	0	2	0	0
Ditto, straight joint, splayed									
headings	1	18	0	2	1	0	2	6	0
$1\frac{1}{4}$ in. deal, rough, edges shot	1	19	6	2	1	6			
Ditto, wrought & laid folding	2	3	0	2	6	0	2	8	0
If ploughed and tongued, or rabbeted and filleted, add on									
$\frac{3}{4}$ in 4s. 3d., and on 1 in. 5s. 3d.									

PARQUET FLOORS.

	PER FT. SUPER.	
	s.	d.
Solid deal	0	9
„ deal, deal and cherry	1	1
„ oak	1	2
„ oak, walnut and maple	1	3
„ „ with black lines	1	5
„ walnut	1	7
„ oak, black lines, maple and cherry	1	8
„ mahogany, walnut and maple, with centre design	2	2
„ oak, black lines, maple and mahogany, centre design	2	3
„ oak, walnut, maple and black	2	4
„ „ „ mahogany and white lines	2	8
„ walnut, mahogany, and oak	4	1
„ „ „ and maple	4	5
„ „ oak, mahogany, white, black, and red lines	6	3
Veneered floors—oak, per ft. super.	1	2
„ „ oak and maple	1	9
„ „ rosewood, oak, and maple	2	2

DEAL IN THICKNESSES.

	PER FT. SUPER.					
	$\frac{3}{4}$ in.		$\frac{3}{4}$ in.		1 in.	
	s.	d.	s.	d.	s.	d.
Rough, no labour	0	2	0	3	0	4
Ditto, including labour and nails	0	3	0	4	0	5
Ditto, edge shot and wrought on one side	0	5	0	6	0	8
Wrought both sides	0	6	0	7	0	8
Add, if ploughed and tongued, or rebated and lapped	0	1	0	$1\frac{1}{4}$	0	2

Calculate at and after the above rate for greater thicknesses.

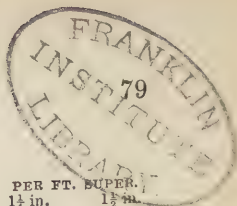
SKIRTINGS.

INCLUDING BACKS.

	PER FT. SUPER.					
	$\frac{3}{4}$ in.		1 in.		$1\frac{1}{4}$ in.	
	s.	d.	s.	d.	s.	d.
Square skirtings	0	7	0	8	0	9
Ditto, raking and scribed to steps	0	10	0	11	1	0
Ditto, ramped	1	0	1	2	1	3
Torus skirting	0	8	0	10	1	0
Ditto, raking and scribed	1	0	1	1	1	3
Ditto, ramped	1	2	1	4	1	5
Rebated and backed plinth, includ- ing floor fillet	0	9	0	11	1	0
Ditto, ditto, and raked and scribed	0	11	1	0	1	1
Ditto, ramped	1	2	1	4	1	5
Plain level circular skirting	0	11	1	1	1	4
Raking ditto, and scribed	1	5	1	8	1	10
Level circular torus skirting	1	2	1	4	1	5
Raking ditto, and scribed	1	8	2	0	2	2
Level circular rebated and backed plinth	1	2	1	4	1	6
Raking ditto, and scribed	1	8	2	0	2	3
Circular plinth ploughed and blocked on cylinder	1	11	2	3	2	8
Ditto, raking ditto	2	2	3	4	3	9
If scribed to moulded nosing, add . . . . .	..	..	..	..	0	2
If plugged, add . . . . .	..	..	..	..	0	2
If rebated to form double plinth, add . . . . .	..	..	..	..	0	2

BUILDER'S PRICES.

PILASTERS.



PER FT. SUPER.
 $1\frac{1}{4}$ in. $1\frac{1}{2}$ in.
s. d. s. d.

Deal plain pilasters, mitred together, glued up, and blocked.	1	5	..	1	9
Ditto, of different widths	1	8	..	2	2

Carving Ionic caps complete, at per inch in circumference,
1s. 6d. to 1s. 10d.

Ditto, Corinthian or composite, 2s. 9d.

GROUND.

PER FT. SUPER.

	1 in.	$1\frac{1}{4}$ in.	$1\frac{1}{2}$ in.
	s. d.	s. d.	s. d.
Framed and splayed for plastering	1 1 $\frac{1}{2}$	1 3	1 5
Ditto, circular on plan	1 4	1 6	1 10
If beaded on edge, add	0 1 $\frac{1}{2}$	0 1 $\frac{1}{2}$	0 2
If mitred " "	0 1 $\frac{3}{4}$	0 2	..
Skeleton grounds	0 10	0 11	1 0 $\frac{1}{2}$

SASHES AND FRAMES.

PER FT. SUPER.

	$1\frac{1}{2}$ in. sashes.	2 in. sashes.	$2\frac{1}{4}$ in. sashes.
	s. d.	s. d.	s. d.
Deal cased frames, oak sunk sills, ovolo sashes, single hung with flax line, brass pulleys, and iron weights	1 8	2 0	2 2
Ditto, double hung	1 10	2 2	2 4
Deal cased frames, oak sunk sills, ovolo sashes, single hung with flax line, brass pulleys, and iron weights, circular on plan, $\frac{1}{4}$ in. rise to the foot	2 9	3 1	3 8

SASHES AND FRAMES—*Continued.*

	PER FT. SUPER.					
	1½ in. sashes. s. d.		2 in. sashes. s. d.		2½ in. sashes. s. d.	
Deal cased frames, oak sunk sills, ovolo sashes, single hung with flax line, brass pulleys, and iron weights, circular head, ¼ in. rise to the foot	9	6	..	10	3	.. 12 0
Frames, sashes, &c., as before, with circular and straight top rail, spandrel lights, finished square inside, with deal spandrel ex- ternal pieces	3	1	..	3	8	.. 4 6
Ditto, with chord bar in thicknesses	3	11	..	4	6	.. 5 2
If astragal and hollow, add . . .	0	1½	..	..	..	..
If marginal lights, add	0	3	..	0	3½	.. 0 3
Deal cased frames, oak sunk sills, wainscot pulley pieces and beads, astragal and hollow wainscot or Honduras mahogany sashes, double hung, brass pulleys, patent lines, iron weights . . .	3	1	..	3	8	.. 4 1
Ditto, circular on plan, ¼ in. rise .	3	10	..	5	3	.. 6 3
If fancy bar, add	0	4	..	0	4½	.. 0 5
Deal cased frames, oak sunk sills, mahogany pulley pieces, &c., Spanish mahogany sashes, double hung, brass pulleys, patent lines, and iron weights	4	3	..	4	9	.. 6 3
Ditto, circular on plan, ¼ in. rise .	6	3	..	7	0	.. 7 7
If fancy bar, add	0	4	..	0	5	.. 0 7

BUILDER'S PRICES.



VENETIAN FRAMES AND SASHES.

	PER FT. SUPER.					
	1½ in.		2 in.		2½ in.	
	sashes.	s. d.	sashes.	s. d.	sashes.	s. d.
Deal cased frame, solid mullions, oak double sunk sills, deal pulley pieces, beads, ovolo sashes, double hung, across side lights, brass pulleys, best white lines, and iron weights	3	6	..	4	1	.. 4 5
Ditto, ditto, circular on plan, ¼ in. rise	4	9	..	5	4	.. 5 9
Ditto, ditto, ½ in. rise	5	9	..	6	2	.. 6 8
For astragal and hollow, add	0	1	..	0	1½	.. 0 1½
Brass axle pulleys and patent lines, add	0	2½	..	0	2½	.. 0 3½

INSIDE SHUTTERS.

MOULDINGS OR GROOVES EXTRA.

	PER FT. SUPER.					
	¾ in.		1 in.		1½ in.	
	s. d.	s. d.	s. d.	s. d.	s. d.	s. d.
Ledged, rebated, and beaded, or clamped	1	2	..	1	4	.. 1 6½
	1 in.		1½ in.		1½ in.	
Two panels, framed square, in one height	1	5	..	1	6½	.. 1 10
Two panels, bead butt or moulded	1	7½	..	1	9	.. 2 0
" bead flush and square	1	8	..	1	9½	.. 2 1
" bead butt and moulded	1	9	..	2	0	.. 2 2
" moulded both sides	1	8	..	2	0	.. 2 1½
If more than 2 panels, add for every additional panel	0	1½	..	0	1½	.. 0 1½

OUTSIDE SHUTTERS.

	PER FT.		SUPER.	
	1 1/4 in.		1 1/2 in.	
	s.	d.	s.	d.
3 panels, framed square, rebated and beaded . . .	1	8	..	1 10
Ditto, bead butt or moulded and square . . .	1	9	..	1 11
Ditto, bead butt and moulded	1	10	..	2 0
Ditto, ditto, and bead flush	2	0	..	2 2
If more than 3 panels, add for each	0	1 1/2	..	0 2
If bolection moulding, add	0	1 1/2	..	0 2

SHUTTERS HUNG WITH LINES AND WEIGHTS.

	PER FT.		SUPER.	
	1 in.		1 1/4 in.	1 1/2 in.
	s.	d.	s.	d.
Two panels, square framed	1	7	..	1 10
Ditto, bead butt, or moulded and square	1	9	..	1 11
Ditto, bead flush and square	2 2	..
Ditto, 3 or 2 reeds, flush and square	2 2	..
Ditto, bead butt, and moulded	2 2	..
Ditto, bead butt and bead flush	2 5	..
Should the work consist of more or less than 2 panels, add or deduct for each	0 1 1/4
If ditto are frieze panels, add	0 1 1/2
If hung with patent lines, add	0 3/4
If double margin, add	0 3 1/2

DOORS.

DEAL FRAMED, SIX PANEL.

	PER FT.		SUPER.	
	1 1/2 in.		2 in.	2 1/2 in.
	s.	d.	s.	d.
Skeleton	1	4	..	1 8
Framed panels, flush one side	1	8	..	2 0
Square framed	1	9	..	1 11
Bead butt and square	1	9	..	1 11
Bead flush and square	1	10	..	2 2
Moulded and square	1	10	..	2 0
Bead butt, both sides	2	0	..	2 3

DOORS—*Continued.*

	PER FT. SUPER.					
	1½ in.		2 in.		2½ in.	
	s.	d.	s.	d.	s.	d.
Bead butt, and bead flush . . .	2	1	..	2 4	..	2 8
Ditto and moulded	2	0	..	2 3	..	2 5
Bead flush, both sides	2	1	..	2 5	..	2 9
Ditto and moulded	2	1	..	2 6	..	2 8
Moulded both sides	2	0	..	2 4	..	2 7
External doors, ordinary	1	8	..	2 1	..	2 4
Ditto bead butt on the back: . . .	1	10	..	2 3	..	2 6
If the four upper panels be moulded, add	0	2	..	0 3	..	0 8
Circular heads, double price of square.						
Elliptic ditto, three and a half times.						

DEAL SASH DOORS.

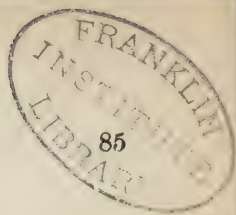
	PER FT. SUPER.					
	1½ in.		2 in.		2½ in.	
	s.	d.	s.	d.	s.	d.
Deal ovolo sash, square framed, bottom panels with diminished stiles	1	0	..	2 0	..	2 1
Ditto, bead butt, or moulded and square	1	8	..	2 0	..	2 1
Ditto, bead flush and square . . .	1	9	..	2 1	..	2 2
Ditto, moulded on both sides . . .	1	10	..	2 2	..	2 3
Ditto, bead flush and moulded . . .	1	11	..	2 3	..	2 4
If with astragal and hollow sash, add	0	0 ³ / ₄	..	0 1	..	0 1 ¹ / ₄
If with bolelection moulding, add .	0	1	..	0 1	..	0 1 ³ / ₄
If with bead butt shutter, add . .	0	5	..	0 7	..	0 8
Ditto, bead flush, add	0	7	..	0 8	..	0 9
Skeleton doors, diminished stiles, and the lower framing square . .	1	5	..	1 8	..	1 9
Ditto, bead butt, or moulded and square	1	6	..	1 9	..	1 11
Ditto, bead flush and square . . .	1	8	..	1 11	..	2 1
Skeleton doors, both sides moulded	1	8	..	1 11	..	2 1
Ditto, bead flush and moulded . . .	1	9	..	2 0	..	2 1
If hung folding, add	0	1	..	0 1	..	0 2
Double margined, add	0	2	..	0 3	..	0 4

FOUR-PANEL DOORS.

	PER FT. SUPER.					
	1½ in.		2 in.		2½ in.	
	s.	d.	s.	d.	s.	d.
Skeleton doors	1	4	..	1 6	..	1 9
Framed panels, flush one side . .	1	7	..	1 9	..	1 11
Square framed	1	5	..	1 7	..	1 9
Bead butt and square	1	7	..	2 0	..	2 1
Bead flush and square	1	8	..	2 0	..	2 2
Moulded and square	1	8	..	1 11	..	2 1
Moulded both sides.	1	8	..	1 11	..	1 11
External doors, lower panels bead flush, and upper panels square .	1	6	..	1 9	..	2 2
If upper panels have mouldings, add	0	2½	..	0 2½	..	0 3
Ditto, with bolection moulding .	0	3	..	0 3½	..	0 4½

TWO-PANEL DOORS.

	PER FT. SUPER.					
	1½ in.		2 in.		2½ in.	
	s.	d.	s.	d.	s.	d.
Skeleton doors	1	1	..	1 4	..	1 7
Framed with flush panels on one side	1	3	..	1 6	..	1 9
Square framed	1	4	..	1 6	..	1 8
Bead butt and square	1	5	..	1 8	..	1 11
Bead flush and square	1	6	..	1 9	..	2 0
Moulded and square	1	5	..	1 8	..	1 11
Moulded on both sides.	1	5	..	1 9	..	2 1
External doors, the lower panel bead flush, upper square for moulding	1	5	..	1 7	..	1 9
Ditto, bead butt on back	1	7	..	1 9	..	2 0
Ditto, bead flush on ditto. . . .	1	8	..	1 11	..	2 1
If moulded on face, add	0	2	..	0 2½	..	0 3



BUILDER'S PRICES.

CELLAR FLAPS.

	PER FT. SUPER.		PER FT. SUPER.	
	1½ in.		2 in.	
	s.	d.	s.	d.
Yellow deal, wrought, ploughed and tongued, with 1½ ledge	1	7	1	11
Ditto, if of old ship oak	2	8	3	4
Ditto, of new oak	2	10	3	8
If beaded, add on price for deal	0	1		
Ditto, add on the oak	0	1½		
For letting in ledges, to take a solid bearing on kerb, each	0	4		

CLOSET DOORS.

	PER FT. SUPER.		PER FT. SUPER.	
	1 in.		1½ in.	
	s.	d.	s.	d.
1 panel, square framed, dwarf closet door	1	1	1	5
Ditto, bead butt or moulded	1	5	1	8
Ditto, bead flush and square	1	6	1	9½
If hung folding, add	0	1	0	1½
2 panels, square framed doors	0	11	1	0
Ditto, bead butt or moulded	1	2	1	4
Ditto, bead flush and square	1	3	1	4

LEDGED DOORS AND TRAPS.

	PER FT. SUPER.		PER FT. SUPER.		PER FT. SUPER.	
	¾ in.		1 in.		1½ in.	
	s.	d.	s.	d.	s.	d.
Deal, rough edges shot	0	9½	0	10½	1	0
Ditto, tongued	0	10½	1	0	1	1½
Deal, wrought . . . . .	..	..	1	1½	1	3
Ditto, tongued and beaded . . . . .	..	..	1	3½	1	4½
If 1½ in. deal, add . . . . .	..	..	..	..	0	2½
If braced or hung folding, add . . . . .	..	..	..	..	0	2½

FRAMED GROUNDS AND CLOSET FRONTS.

	PER FT. SUPER.					
	1 in. s. d.		1½ in. s. d.		1½ in. s. d.	
Framed and ploughed or splayed for plastering	1	1	..	1	2	.. 1 5
Ditto, circular on plan, ¼ in. rise	1	4	..	1	6	.. 1 10
Ditto, circular head	2	5	..	2	10	.. 3 4
Skeleton grounds	0	10	..	1	0	.. 1 2
If beaded or mitred on edge, add	0	1½	..	0	1½	.. 0 2

GATES AND COACH-HOUSE DOORS.

	PER FT. SUPER.					
	2 in. s. d.		2½ in. s. d.		3 in. s. d.	
Framed, ledged, braced and filled in with deal (inch thick), ploughed, tongued, and beaded	2	2	..	2	5	.. 2 10
Ditto, with battens	2	5	..	2	10	.. 3 4
Ditto, with ½ plank widths	2	8	..	3	0	.. 3 6
Ditto, with ½ deal widths	2	11	..	3	4	.. 3 10
When filled in with 1½ in. boards, add . . . . .	..	..	1	0	..	1 0
Framed bead butt and square, in say, 12 panels the pair	2	6	..	3	0	.. 3 4
Ditto, bead flush and square	2	10	..	3	4	.. 3 6
Ditto, 2 reeds flush and square	3	0	..	3	5	.. 3 8

DEAL DOOR JAMB LININGS.

	PER FT. SUPER.					
	1 in. s. d.		1½ in. s. d.		1½ in. s. d.	
Single rebated	1	0	..	1	2	.. 1 4
Ditto to head, circular on plan	1	6	..	1	8	.. 1 10
Ditto, both edges	2	0	..	2	0	.. 2 4
If beaded, add for one edge	0	1½	..	..	..	..
Square framed two panel jambs, double rebated . . . . .	..	..	1	4	..	1 6
Ditto, and bolection moulded . . . . .	..	..	1	9	..	1 11

SOFFITS, ELBOWS, AND BACKS.

	PER FT. SUPER.		1½ in.	
	s.	d.	s.	d.
Soffits only, square framed	1	8	1	10
Ditto, circular on one edge	2	5	2	11
Ditto, ditto, two edges	3	0	3	7
Moulded soffits	1	9	2	0
Ditto, circular, one edge	2	9	2	10
Ditto, ditto, two edges	3	6	4	0
If bead flush . . . . .	..	..	0	1
Square framed backs	1	4	1	6
Ditto circular on plan	1	10	2	2
Ditto, circular on plan	1	6	1	8
Moulded or bead butt backs	2	0	2	4
If bead flush, add . . . . .	..	..	0	1
1 in.				
Plain back and elbows	1s. 2d.	1	4	1 7
Square framed backs, elbows, and soffits	1	7	1	9
Ditto, moulded or bead and butt	1	9	2	0
Ditto bead flush	1	10	2	0
If splayed on plan, add . . . . .	..	..	0	2
Beaded moulding, per foot run . . . . .	..	..	0	2

STAIRCASES.

	PER FT. SUPER.	
	s.	d.
Inch deal treads and risers, glued and bracketed for plastering	1	4
1½ in. deal treads and inch risers	1	5
1½ treads and risers	1	6
If rough, deduct.	0	2
1½ in. best yellow deal steps and risers glued up and blocked, moulded nosings, and fir carriages	1	8
Ditto mitred and dovetailed to balusters, circular one end	2	4
Ditto ditto 2 ends	2	8
1 in. yellow deal wrought steps, risers, and strong carriage	1	8

STAIRCASES—*Continued.*

	PER FT. SUPER.
	s. d.
2 in. rough deal treads, $1\frac{1}{4}$ in. risers to close string for shop stairs	1 7
Ditto wrought	1 10
Returned moulded and mitred nosings	0 9
Circular ditto	1 2
Plain cut brackets	1 2
Circular ditto.	1 9
Housing steps, and wedging up into string.	0 $7\frac{1}{2}$
Ditto to winders.	0 10

DADO.

	PER FOOT SUPER.
	1 in. $1\frac{1}{4}$ in.
	s. d. s. d.
Deal keyed	1 0 .. 1 1
Ditto, tongued	1 1 .. 1 2
If feather tongued, add	0 2 .. 0 2
When raking, and scribed to steps, add	0 $1\frac{1}{2}$.. 0 $1\frac{1}{2}$
Ditto, to moulded nosing	0 2 .. 0 2
Ramps, per foot run, extra	1 2 .. 1 2
Circular on plan, $\frac{1}{4}$ in. rise	1 10 .. 2 0
If $\frac{1}{2}$ in. rise	2 5 .. 3 1
Writhed	3 10 .. 4 5
Narrow grounds, per foot run . . . . .	.. .. 0 $2\frac{1}{2}$
Ditto, if circular. . . . .	.. .. 0 7
Mitred angles . . . . .	.. .. 1 5

STRING BOARDS.

	PER FT. SUPER.
	1 in. $1\frac{1}{4}$ in. $1\frac{1}{2}$ in.
	s. d. s. d. s. d.
Plain outside string.	0 11 .. 1 $0\frac{1}{2}$.. 1 3
Rebated and beaded ditto	1 0 .. 1 2 .. 1 4
Wreathed outside string, glued up-right, rebated, and beaded, by foot run.	6 8
Ditto and moulded	8 8

WALL STRINGS.

	PER FT. SUPER.					
	1½ in.		1½ in.		2 in.	
	s.	d.	s.	d.	s.	d.
Plain wall string, including plugging	1	0	..	1 2	..	1 6
Ditto ramped	1	4	..	1 9	..	2 2
Ditto wreathed	4	8	..	5 7	..	6 10

BALUSTERS.

	PER FT. RUN.	
	2 in.	
	s.	d.
Inch square bar balusters, by foot run	0	2
Dove-tailed ditto	0	3
Ditto wainscot	0	4
Fixing iron newels	2	9
Ditto iron balusters, screw included	1	4
Ditto iron stays	0	5
2¼ framed newels	0	7
2½ " "	0	8

MANGERS, RACKS, AND THE LIKE.

	PER FT. SUPER.					
	1 in.		1½ in.		1½ in.	
	s.	d.	s.	d.	s.	d.
Deal mangers	0	6	..	0 8	..	0 9
Wrot one side, ploughed, tongued, and beaded for stalls	0	8	..	0 9	..	0 10
Wrot two sides ditto	0	10	..	0 11	..	1 1
Wrot, rebated, and round capperge, 3 by 2, per foot run . . . . .	..	..	..	..	..	0 10
Oak ditto . . . . .	..	..	..	..	..	1 1
Oak ditto, 4 by 3 . . . . .	..	..	..	..	..	1 6

HANDRAILS.

	PER FT. RUN.					
	Deal.		Wainscot.		Spanish Mahogany.	
	s.	d.	s.	d.	s.	d.
2 in. rail moulded, $2\frac{1}{4}$ in. wide . .	1	0	..	2 4	..	3 10
Ditto ramped	2	5	..	4 10	..	6 8
Ditto swan-necked	3	0	..	6 0	..	8 4
$2\frac{1}{4}$ in. rails, moulded ; grooved and beaded, $2\frac{1}{2}$ wide	1	4	..	2 10	..	3 10
Ramped	3	0	..	5 9	..	7 9
Swan-necked.	3	8	..	6 6	..	10 0
Wreathed and twisted	6	8	..	11 0	..	15 3
Mitred and turned caps, each . .	1	10	..	2 4	..	3 10
Allow for fitting iron cores, per ft. run	0	2	..	0 $2\frac{1}{2}$	..	0 $2\frac{1}{2}$
„ circular ramps	0	3	..	0 $3\frac{1}{2}$	..	0 $4\frac{1}{2}$
Nut and screw, each	1	9	..	2 0	..	2 5
French polishing rail, per ft. run .	..	..	..	0 $4\frac{1}{2}$	..	0 $5\frac{1}{2}$

BLINDS.

OUTSIDE BLINDS.

All blinds which contain less than 20 ft. are to be charged
20 feet in each.

	PER FT.	
	s.	d.
Outside Spanish, with spring, fitted in cases, and painted	2	3
New cloth to ditto, made to old frames	0	9
Outside Florentine blinds	1	10
New striped cloth to ditto, each blind	11	0
Charge for taking blinds to pieces, cleaning, and refixing	0	8
Ditto ditto when new cloth is provided	0	9
Outside Venetian blinds, all complete	1	9
Outside Oriental blinds for windows with circular heads	2	8
Outside shutter blinds, in any tint	3	10
Storm blinds, fitted with patent apparatus, per ft. super.	4	10
Shutter blinds, folding	3	4
If ditto made to slide	3	9



BUILDER'S PRICES.

SMITH.

WROUGHT IRON.

	s.	d.
Wrought-iron bar, square or otherwise . . . per cwt.	14	6
T iron "	17	6
Hoop iron (best) "	17	6
Sheet iron "	18	6
Iron bar, round and square, at $1\frac{1}{4}d.$ per lb.		
Ties and straps in floors and roofs, including nails,		
per lb.	0	5
Twisted ditto "	0	6
Screw bolts, nuts, and washers, and stirrups . . . "	0	8
Bolts and nuts for tanks "	0	7
Drain gratings per cwt.	18	6
Hook and eye hinges per lb.	0	7
Tanks by cwt., net value from shop prices.		

CAST IRON.

	s.	d.
Furnace bars and framed bearers . . per cwt. average	17	0
Sash weights " "	13	0
Sink traps " "	22	0
Balconies and panels for verandah on staircase,		
from 24s. to	30	0
Truss brackets per cwt.	24	0
Newel bars "	25	0

Rain-water pipes and guttering at the shop by the yard, according to diameter of pipe and sizes of heads, shoes, and elbows.

Bolts, and nuts, and screws for ditto, 1s. per doz.; O. G. gutters, add 12 per cent. to O. G. gutter prices.

IRON STAIRCASES.

		PER STEP		
		£	s.	d.
5 ft. diameter	. . . . .	0	19	0
6 ft. „	. . . . .	1	4	0
7 ft. „	. . . . .	1	7	0
8 ft. „	. . . . .	1	10	6

MASON.

CAEN, BATH, AND PORTLAND STONE.

	PER CUBIC FT.					
	Caen.		Bath.		Portland.	
	s.	d.	s.	d.	s.	d.
In block, prime cost at merchant's						
depôt in London	2	1	..	2 1	..	3 3
Ditto, including profit and cartage						
within 4 miles of wharf	3	2	..	3 2	..	3 8
Ditto, including setting	3	7	..	3 6	..	4 9
Ditto, hoisting and scaffolding, add	0	7	..	0 7	..	0 7

The following may be taken as fair prices for labour, including setting and leaving stone clean :—

Sawing	0	4	..	0 4	..	0 7
Plain work to beds and joints . .	0	9	..	0 9	..	1 4
Ditto, rubbed work	0	10	..	0 8	..	1 7
Ditto, circular stone (at base) . .	1	5	..	1 3	..	2 8
Moulded work, not more than 2 in. girt	1	7	..	1 4	..	2 11
Ditto, circular stones (at base) . .	1	9	..	1 5	..	3 4
Ditto, circular on elevation . . .	1	11	..	1 6	..	3 9
Stopped plain work, average 1½ in.	1	4	..	1 0	..	2 6
Stopped circular work	1	5	..	1 1	..	3 0

	PER CUBIC FEET.					
	Caen.		Bath.		Portland.	
	s.	d.	s.	d.	s.	d.
Tool plain work to face	0	8	..	0 7	..	1 4
Tool circular	1	0	..	0 8	..	1 11
Landings to staircases, &c., plain rubbed face on both sides, in- cluding fixing and scaffolding						
3 in. thick, per ft. super	2	6	..	2 9	..	3 9
For every inch in thickness, add	0	3	..	0 3	..	0 5
If above 30 feet in one stone, add	0	3	..	0 3	..	0 4
Window sills, rubbed and fixed, 8 in. by 3, weathered and throated	1	10	..	1 6	..	3 0
Ditto, 8 in. by 3, and sunk	2	1	..	1 9	..	3 4
Ditto, 1 ft. wide, 2½ in. mean thick- ness	1	10	..	1 10	..	2 9
Ditto, 16 in. wide, 2½ in. mean thick- ness	3	0	..	2 8	..	3 6
Mantles, jambs, and shelves, 1 in.	1	10	..	1 4	..	..
Ditto ditto 1 in.	2	4	..	1 8	..	..
Ditto ditto 2 in.	2	9	..	1 9	..	..
Ditto ditto 3 in.	2	7	..	2 3	..	..
Kerb, rubbed and set 6 in. on bed.	2	2	..	2 0	..	3 2
If rounded on top, add	0	3	..	0 2	..	0 4

SINKS.

	Portland.		Caen.		Bath.	
	s.	d.	s.	d.	s.	d.
6 in. by 3 in.	6	2	..	3 5	..	3 5
7 in. by 4 in.	7	4	..	4 6	..	4 6
8 in. by 5 in.	8	6	..	5 0	..	5 0
Paving rubbed 1 in. straight course	1	10	..	1 2	..	1 3
Ditto 2 in. ditto	2	1	..	1 3	..	1 7
Ditto 3 in. ditto	2	7	..	1 8	..	1 9
If laid diagonally, add	0	4	..	0 3	..	0 3
If in octagon, add	1	10	..	1 6	..	1 6

RUNNING ARTICLES.

	Portland.		Caen.		Bath.	
	s.	d.	s.	d.	s.	d.
Throating, $\frac{5}{8}$ of in., per ft. run . .	0	1	..	0	0 $\frac{3}{4}$	.. 0 1 $\frac{1}{2}$
Chamfers, $1\frac{1}{2}$ in. on face, ,, . .	0	0 $\frac{3}{4}$	..	0	0 $\frac{3}{4}$	.. 0 1 $\frac{1}{2}$
Rusticated quoins, not more than						
$2\frac{1}{2}$ in. in depth	0	3	..	0	3 $\frac{1}{2}$	.. 0 6
Inch staff bead	0	1 $\frac{1}{2}$	..	0	1 $\frac{1}{2}$	.. 0 3 $\frac{1}{2}$
Geometrical steps, each	0	10	..	0	9	.. 1 4

NUMBERS.

	s.	d.	s.	d.	s.	d.
Rail holes 1 in. square. . . each	0	1	..	0	1	.. 0 2
Plugs to joints, $1\frac{1}{4}$ in. deep, and						
run with lead each	0	3 $\frac{1}{2}$	..	0	3 $\frac{1}{2}$	.. 0 4 $\frac{1}{2}$
Iron cramps to mantles . . . ,,	0	4	..	0	4	.. 0 4
Letting in bell-trap and washer ,,	0	9	..	0	9	.. 1 0
Ditto, 6 in. ditto. ,,	1	2	..	1	3	.. 1 7
5-holed drain-stone, 12 by 12 by $2\frac{1}{2}$						
each	2	4	..	2	3	.. 4 0
Balusters, 6 in. diameter, 18 inches						
high each	5	6	..	5	0	.. 8 0

PATENT VICTORIA STONE.

	s.	d.
Granite flagging, 1 in. thick, for pavements, per ft. super.	0	4 $\frac{1}{2}$
Granite flagging, 2 in. thick, for street pavements, as		
laid in various parts of London, per ft. super.	0	6 $\frac{1}{4}$
Landings, 3 in. thick, per ft. super.	1	2
Ditto, 4 in.	1	4 $\frac{1}{2}$
Sinks to order, about per ft. super.	1	7

KENTISH RAG.

	s.	d.
Rough rag, delivered within $3\frac{1}{2}$ miles from London		
Bridge, per ton	7	0
Headers, ditto, per ton	14	4
Hassock, roughly squared, per ft. cube, labour only	0	4
Ditto, best squared	0	5

YORKSHIRE STONE.

	Park Spring. s. d.	Hard York. s. d.
In block, per ft. cube	2 9	2 9
Ditto, including waste, profit, and cartage for 4 miles or under, per ft. cube	3 3	3 3

LABOUR.

To YORKSHIRE STONE.

	PER FT. CUBE.	
	Park Spring. s. d.	Hard York. s. d.
Sawing	0 10	1 0
Plain work to beds and joints	1 4	2 2
When circular on plan	2 4	3 2
When sunk, add	2 6	3 5
Moulded straight, members not less than 2½ in. girt	2 7	3 5
Circular on plan	3 6	4 9
Fooled landings for staircases, balconies, plain face both sides, including setting, pinning, and scaffolding, 3 in. thick	2 11	3 5
Landings, per ft. super. for every inch in thickness, add	0 3	0 3
If above 30 ft. super. in on one stone, add	0 3	0 3
Steps gauged to thickness, and fixed 9 in. wide, 6 in. thick	3 2	3 8

LABOUR—*Continued.*

	PER FT. CUBE.			
	Park Spring. <i>s. d.</i>	Hard York. <i>s. d.</i>		
Tooled 6 in., channel sunk $1\frac{1}{2}$ deep in stone, per ft. run (10 inches)	1 8	.. 1 10		
If rubbed, add	0 4	.. 0 4		
Coping, average thickness 3 in. to $3\frac{1}{2}$ in., feather edged, 12 in. wide, and one throat, including setting	1 9	.. 1 10		
Sinks, including setting, per ft. super. . . .	3 8	.. 4 1		
If set in cement, add 2 <i>d.</i> a ft.				
Window sills, rubbed and fixed, weathered and throated, 8 in. by 3 in., per ft. run. .	1 11	.. 2 1		
Ditto, and sink, 8 in. by 3 in., , , . .	2 1	.. 2 5		

GRANITE COLUMNS, POLISHED.

	PER FT. RUN		
	£	<i>s.</i>	<i>d.</i>
3 inches diameter	1	8	0
4 ditto	1	7	0
5 ditto	1	6	6
6 ditto	1	6	0
7 ditto	1	6	9
8 ditto	1	7	3
9 ditto	1	10	3
10 ditto	1	12	3
11 ditto	1	14	6
12 ditto	1	18	3

FIRE STONE.

	£	<i>s.</i>	<i>d.</i>
Block 6 in. thick, per ft. super.	0	2	7
Double ditto, per ft. super.	0	4	7
Slit blocks, including plain face	0	1	8
Hearths and coverings, 2 in. thick and rubbed . . .	0	1	8

BUILDER'S PRICES.



PLASTERER.

AND LATH, PLASTER, FLOAT, AND SET.

GENERAL PRICES.

	PER YARD SUPER.		PER YARD SUPER.	
	Straight.		Circular.	
	s.	d.	s.	d.
Plaster, one coat on brick, rough	0	7	..	0 8
Ditto, and set with fine stuff	0	10	..	1 1
Ditto, two coats and set	1	1	..	1 3
Render float and set	1	1	..	1 5
Ditto to arched work	1	1	..	1 8½
Gauging with plaster, per coat	0	3¼	..	..
Ditto, with cement, per coat	0	2¼	..	..
Quick, by the ft. run	0	0¾	..	0 1
Arris, „	0	1	..	0 1½
Bead and double quirk	0	2½	..	0 5½

STUCCO.

	PER YARD SUPER.		PER YARD SUPER.	
	s. d.		s. d.	
	s.	d.	s.	d.
When rendered on brick, to resemble stone-work	1	7	..	1 10
When rendered on lath	2	2	..	2 10
Trowelled stucco, when rendered on brick	1	7	..	2 2
Ditto on lath	2	2	..	2 9
Dadoes and ceiling, add.	0	3¼	..	0 4½
Stucco reveals to window, 4½ in. face, per ft. run	0	4½	..	0 5
Single quirks, per ft. run	0	1½	..	0 2¼
Double ditto, per ft. run.	0	1¼	..	0 2½
Arris edegs	0	1¼	..	0 2½
Raised margins to form panelling, 4½ in. wide	0	5	..	0 6
Soffits 1 ft. 6 in. wide and under, per ft. super.	0	6	..	0 7

REPAIRS.

	One Coat.		Two Coats.	
	s.	d.	s.	d.
Washing and stopping, per yard super.	0	1½	0	2
Ditto and scraping, per yard super.	0	2½	..	..
Whiting, including whiting and size	0	1½	0	1½
Wash, stop, and white to old work, per yard super.	0	3½	0	4
Wash, stop, claircolle, and white to old work	0	4	..	0 5
Ditto, it stone, buff, salmon, or drab colour . . .	0	5	..	0 6
Wash, stop, buff, straw, or lemon colour . . .	0	5	..	0 6½
Wash, stop, and grey colour	0	7	..	0 8½
Ditto, blue colour	0	8½	1	0½
Ditto, pea green	0	9	1	3
Lime whiting	0	2	0	2½

MOULDED CORNICES.

	PER YARD SUPER.			
	Straight.		Circular.	
	s.	d.	s.	d.
Mouldings under 8 in. girt, per inch gilt . . .	0	1½	0	2
Ditto, above 8 in. girt, per ft. super.	0	11	1	9
Mitres, each.	0	1½	0	2

ENRICHMENTS.

	s.	d.	s.	d.
Solid members, per inch girt	0	2	0	3
Underbut, per inch girt	0	3½	0	5
Enriched soffits, per inch wide	0	2	0	3
Extra ditto, per inch wide	0	3	0	4
Wreath of oak leaves and acorn in cup . . .	2	0	..	..
Wash stop and whitening with whiting, twice done, per yard . . . . .	..	..	0	4
Limewhiting only, per yard . . . . .	..	..	0	2

COLOURING AND WHITENING.

	PER YARD SUPER.
	s. d.
Limewhiting, each coat	0 1
Whitening new work	0 1
Colouring ditto	0 2
Wash and stop for paper hanging	0 1½
Wash, stop, and claircolle, and white	0 2
Ditto, and any common colours	0 3
Wash, stop, and fine colours, any warm tints	0 4
Wash, stop, and <i>delicate tints</i> , such as pink, &c.	0 4½
Washing and stopping ordinary cornices under 12 inches	0 1
Ditto, from 12 to 15 inches	0 1½
For every enrichment	0 1
Chimneys repaired	1 1

PLUMBER.

	per cwt.	£ s. d.
Milled lead, in rolls	per cwt.	1 8 0
When cut to dimensions	„	1 10 6
Ditto, and laying in gutters or flats	„	1 12 6
Ditto for ridges and the like	„	1 14 8
Window lead, various and average	„	2 3 0
Tin pipe, per foot, according to diameter.		
Wall-hooks and holdfasts		0 0 0½
Square cistern heads, average		0 12 0
White closet basins		0 6 0
Enamelled iron ditto		0 12 0
Strong lead-trap		0 14 6
Cast-iron traps for drains		0 7 6
Water-closet apparatus complete, consisting of		
Queen's-ware basin and suitable furniture		2 10 0
Blue printed basin, extra		0 4 6
A 12-inch wash-hand basin (common), with plug and chain		0 8 6
Pipes at net prices at the warehouse. (Say Bolding's)		

ROBERT BOLDING'S
PHILADELPHIA

GLAZIER.

	PER FT. SUPER.				Thirds.
	Best.	Seconds.			
	s. d.	s.	d.	s. d.	s. d.
CROWN GLASS:—					
13 oz. glass, including glazing,					
not above 14 in. by 10 in.	0	9	..	0	6½ .. 0 5½
„ 1 ft. 6 in.	0	11	..	0	7¼ .. 0 6
„ 2 ft.	1	1½	..	0	9 .. 0 6½
„ 2 ft. 6 in.	1	2½	..	0	10 .. 0 7

Larger squares or extra thicknesses, add 22 per cent. on the above prices.

Flattened glass, extra per foot, from	..	..	..	..	0 5
Ground ditto, per ft. . . . .	..	..	..	..	0 5
Bent glass, according to the size.					
Bending, per foot, from . . . . .	..	..	..	..	0 5
Crown glass set in old lead lights,					
squares under 8 by 8 . . . . .	..	..	..	..	0 7
For 21 oz. glass, add 2d. a ft. super.					
Squares frosted in imitation of					
ground glass, per ft. super. . . . .	..	..	..	..	0 3½

For other prices for crown glass, see Warehouse Price List for 1874.

COLOURED GLASS, 16 oz. per square foot, in sheets weighing about 16 oz. to the foot, and not more than 40 in. long:—

	s.	d.
Flashed ruby	1	3
Ditto, blue and purple	2	0
Pot metal green	1	3
Ditto, blue, purple, orange, and yellow	1	9½

STAINED GLASS.

In squares not exceeding 42 inches in length.

		s.	d.
15 oz., red	. . . . .	2	0
„ orange	. . . . .	1	7
„ yellow	. . . . .	1	6
21 oz., red	. . . . .	2	3
„ orange	. . . . .	1	9
„ yellow	. . . . .	1	8
26 oz., red	. . . . .	2	6
„ orange	. . . . .	2	0
„ yellow, lemon	. . . . .	1	10
32 oz., red	. . . . .	2	6
„ orange	. . . . .	2	3
„ yellow	. . . . .	2	0

PAINTER.

ORDINARY WORK.

	1 Coat.		2 Coats.		3 Coats.		4 Coats.	
	s.	d.	s.	d.	s.	d.	s.	d.
In ordinary colours, per yard, super	0	4	..	0	7	..	0	9
Carved ornaments, per ft. super.	0	2½	..	0	3½	..	0	4½
Skylights, per yard super. . . . .	..	..	0	5	..	0	6	..
	PER FT. RUN.							
	s.	d.	s.	d.	s.	d.	s.	d.
Skirtings, stringing courses, under 15 in. in width	0	1½	..	0	1¾	..	0	2¼
Handrails, newels, &c., stair margins	0	1½	..	0	1¾	..	0	2¼
Reveals	0	1½	..	0	1¾	..	0	2¼
Cornices under 9 in. girt, and the like	0	1½	..	0	1¾	..	0	2¼
Rain-water pipes	0	2	..	0	3½	..	0	4

EXTRA AND FANCY COLOURS ADD TO ALL ABOVE PRICES.

	Per yard.		For		Squares	
	s.	d.	s.	d.	s.	d.
French grey, drabs, fawn, or salmon	0	1	..	0	0¼	..
Brunswick green or buff	0	1½	..	0	0¼	..
Lilac and peach colours	0	2	..	0	0½	..
Light and olive greens	0	3	..	0	0¾	..
Indian red	0	4	..	0	1	..
Yellow, blue, and patent green	0	6	..	0	1½	..
Lake and vermilion	2	0	..	0	3	..
If the last twice done on scarlet ground	2	6	..	0	3½	..
Party colours	0	1	..	..	..	0
Sanding	0	7	..	..	..	..
Claircolling	0	1½	..	..	..	0
Imitation granite	0	7	..	0	1	..

NUMBERS, &c.

	1 Coat.		2 Coats.		3 Coats.		4 Coats.	
	s.	d.	s.	d.	s.	d.	s.	d.
Frames not more than								
24 ft. super. each side	0	11	..	1 1	..	1 4	..	1 10
Large and Venetian frames	1	1	..	1 7	..	2 4	..	2 9
Squares not more than								
2 ft. 6 in. super. in each,								
per doz.	0	10	..	1 1	..	1 4	..	1 9
Large ditto, ditto	..	1 1	..	1 6	..	2 2	..	2 9
Lights and casements, ordinary size, not exceeding								
6 ft. super. each side	0	2½	..	0 3½	..	0 4½	..	0 5½
Ditto larger, not exceeding								
12 ft. super.	0	3½	..	0 4½	..	0 5¾	..	0 7½
Scrapers and bars, each	0	3	..	0 4	..	0 5	..	0 6
Plain chimney-pieces	..	1 3	..	1 6	..	2 0	..	2 9
Boxed ditto	..	1 9	..	2 3	..	3 0	..	3 9
Iron railing and gates per								
yard	0	7	..	0 9	..	1 0	..	1 3
With dog bars	0	8	..	0 11	..	1 3	..	1 8
If finished olive and								
patent green	0	10	..	1 2	..	1 6	..	1 10
If framed rail at bottom	0	10	..	1 2	..	1 6	..	1 10

MOULDINGS (Cut in).

	s.	d.
Common colours. per ft. run	0	0½
Rosewood, black, or any other „	0	2
Cross-banded margins. „	0	3

PINE OR DEAL STAINED.

By yard super., including stopping.

	s.	d.
Staining only	0	4½
Sizing and staining	0	6½
Ditto, and 1 coat varnish	0	8¾
Ditto, and 2 coats varnish	1	3
If sized extra, add	0	1

IMITATIONS.

	PER YARD SUPER.						Ordinary squares.	
	Frames of ordinary size.							
	Common.		Under 24 ft.		Larger.			
	s.	d.	s.	d.	s.	d.	s.	d.
Wainscot or oak	1	4	1	9	2	3	1	2
Mahogany or maple	1	5	1	10	2	4	1	3
Satin-wood	2	0	2	6	2	9	1	6
Bird's-eye maple, or pollard oak	2	6	3	3	3	6	2	0
Walnut or yew	2	9	3	6	3	9	2	0
Handrail grained mahogany and varnished, at 6d. a ft. run.								

SOLID LETTERS.

	per inch	s.	d.
Plain painted letters, wood		0	3
Shaved wood letters	"	0	4
Ditto, ditto, gilt	"	0	5½
Ditto, ditto, fancy	"	0	7
China letters	"	0	4½
Ditto, blue and gold	"	0	7
Ditto, burnished gold edge	"	1	0
Opal gilt	"	0	5
Ditto, Gothic	"	0	5½
Glass, burnished gold or silver	"	0	4½
Ditto, Gothic	"	0	5½
Embossed ditto	"	0	6½
Ruby, glass, gilt	"	0	7½

MARBLING.

	PER FT. SUPER.
	<i>s.</i> <i>d.</i>
Veined	0 3½
Black and gold	0 6
Porphyry	0 7
Sienna	0 7½
Green marble	0 7

VARNISHING, include size :—

	Per yard super.	Ordinary squares.
	<i>s.</i> <i>d.</i>	<i>d.</i>
Spirit varnish every coat	0 5	5
Twice copal	1 2	11

French polishing, 7½ per ft. super.

PAPER-HANGER, DECORATOR, AND GILDER.

	<i>s.</i> <i>d.</i>	<i>s.</i> <i>d.</i>
Lining paper . . . per piece, average prices	0 6 to	1 0
Hanging paper . . . " " "	0 7 to	0 9
Canvas linings	4 0 to	5 0
Hanging ditto, including sewing and tacks	1 0 to	1 10
Common bedroom paper	0 8 to	1 3
Imitation marble	1 0 to	2 9
Imitation granite	1 3 to	3 0
Imitation of wainscot	1 0 to	2 0
Satin papers	3 3 to	6 4
Crimson flock	8 0 to	12 0
Satin and gold	10 0 to	18 0
Hanging common papers . . . per piece	0 8 to	1 0
" " on ceilings . . . add	..	0 6
" satin papers . . . per doz. yards	0 10 to	1 0
Common border papers	0 9 to	2 0
Hanging borders per doz.	3 4 to	6 6
Sizing 2 coats, and varnishing marble paper, per piece	3 4 to	6 6

	s.	d.	s.	d.
India-rubber paper . . . . .	..		2	6
Tinfoil for damp walls charged time and quantity.				
Slipping joints, brown paper . . . . .	..		1	6
Panelled decoration	5	6 to	24	0
Hanging ditto	1	6 to	3	6
For setting out rooms for decorating in panels, charge time taken.				
Lining out blocks per piece	0	4 to	0	6
Handsome scroll paper, enriched with gold ornamentation per yard	1	6 to	4	0
Corners to ditto	1	6 to	4	0

WRITING ON GLASS.

	s.	d.
Burnished gold, shaded per inch	0	3
„ „ blocked and shaded . . . „	0	5
Embossed gold, shaded „	0	6
„ „ blocked and shaded . . . „	0	7

GILDER.

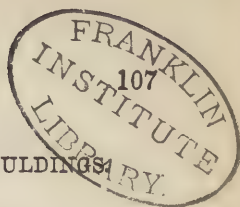
Common metal soon turns black when exposed to damp; the best metal should always be used; the latter will last for several years.

A complete book of gold should contain 25 leaves, $3\frac{1}{2}$ inches by $3\frac{1}{2}$ inches square, or 1 foot $7\frac{1}{2}$ inches superficial, and should cover about one square foot of plain work.

Including preparation.

	Single Gold.		Double Gold.	
	s.	d.	s.	d.
In gold per ft. super.	4	0 ..	5	9
Ditto in burnished gold . . . „ „	5	6 ..	7	0
For enrichments double the above.				
Gilding, 1-inch moulding . . per foot run	0	$4\frac{1}{2}$ ..	..	..
Ditto, $\frac{3}{4}$ -inch, ditto . . . „ „	0	$3\frac{1}{4}$ ..	..	..
Ditto, $\frac{5}{8}$ -inch, ditto . . . „ „	0	$2\frac{1}{4}$ ..	..	..
Ditto, $\frac{1}{2}$ -inch, ditto . . . „ „	0	$2\frac{1}{2}$ ..	..	..

BUILDER'S PRICES.



GOLD AND BLACK STAINED MOULDINGS.

POLISHED,

Including fixing and needle-points.

		PER YARD RUN.	
		Gold.	Gold and Black.
		s. d.	s. d.
2 inches wide	. . . . .	2 2	.. 1 8
1½ " "	. . . . .	1 8	.. 1 2
1 inch wide	. . . . .	1 0	.. 0 9
¾ " "	. . . . .	0 11	.. 0 8
⅝ " "	. . . . .	0 10	.. 0 7
⅜ " "	. . . . .	0 8	.. 0 6

VALUABLE BOOKS FOR BUILDERS, &c.

THE STUDENT'S GUIDE TO THE PRACTICE OF MEASURING AND VALUING ARTIFICERS' WORK; containing Directions for taking Dimensions, Abstracting the same, and bringing the Quantities into Bill, with Table of Constants, and copious Memoranda for the Valuation of Labour and Materials in the respective Trades of Bricklayer and Slater, Carpenter and Joiner, Painter and Glazier, Paperhanger, &c. With 43 Plates and Woodcuts. New Edition, with Additions, by E. WYNDHAM TARN, M.A., Architect. 8vo, 10s. 6d. cloth.

"We have failed to discover anything connected with the building trade, from excavating foundations to bell-hanging, that is not fully treated upon in this valuable work."—*The Artizan*.

LOCKWOOD AND CO.'S BUILDER'S AND CONTRACTOR'S PRICE BOOK—with which is incorporated ATCHLEY'S, and portions of the late G. R. BURNELL'S Builders' Price Books—for 1878, containing the latest prices of all kinds of Builders' Materials and Labour, and of all Trades connected with Building; with many useful and important Memoranda and Tables; Lists of the Members of the Metropolitan Board of Works, of Districts, District Officers, and District Surveyors, and the Metropolitan By-laws. The whole revised and edited by FRANCIS T. W. MILLER, Architect and Surveyor. Fcap. 8vo, strongly half-bound, 4s.

THE COMPLETE MEASURER; setting forth the Measurement of Boards, Glass, &c., &c.; Unequal-sided, Square-sided, Octagonal-sided, Round Timber and Stone, and Standing Timber; also Tables showing the Solidity of hewn or eight-sided timber, or of any octagonal-sided column. Compiled for Timber-growers, Merchants, Surveyors, Stonemasons, Architects, and others. By RICHARD HORTON. Third Edition, enlarged. 12mo, 5s. strongly bound in leather.

THE POCKET ESTIMATOR FOR THE BUILDING TRADES:

Being an Easy Method of estimating the various parts of a Building collectively, more especially applied to Carpenters' and Joiners' work, priced according to the present value of material and labour. By A. C. BEATON, Author of "Quantities and Measurements." Second Edition, carefully revised. 33 Woodcuts. Leather, waistcoat-pocket size, 1s. 6d.

THE POCKET TECHNICAL GUIDE AND MEASURER

FOR BUILDERS AND SURVEYORS; containing a Complete Explanation of the Terms used in Building Construction, Memoranda for Reference, Technical Directions for Measuring Work in all the Building Trades, with a Treatise on the Measurement of Timbers, and Complete Specifications for Houses, Roads, and Drains. By A. C. BEATON. Second Edition. With 19 Woodcuts. Leather, waistcoat-pocket size, 1s. 6d.

THE TRADESMAN'S GUIDE TO SUPERFICIAL MEASUREMENT. Tables calculated from 1 to 200 inches in length, by 1 to 108 inches in breadth. For the use of Architects, Surveyors, Engineers, Timber Merchants, Builders, &c. By JAMES HAWKINGS. Fcap., 3s. 6d. cloth.

THE TIMBER IMPORTERS' AND SHIPOWNERS'

FREIGHT BOOK: Being a Comprehensive Series of Tables for the Use of Timber Importers, Captains of Ships, Shipbrokers, Builders, and all Dealers in Wood whatsoever. By WILLIAM RICHARDSON, Timber Broker, Author of "Packing Case Tables," &c. Crown 8vo, cloth, 6s.

THE HOUSE OWNERS' ESTIMATOR; or, What will it Cost to Build, Alter, or Repair? A Price Book adapted to the use of Unprofessional People, as well as for the Architectural Surveyor and Builder. By JAMES D. SIMON, A.R.I.B.A. Edited and Revised by FRANCIS T. W. MILLER, Surveyor. With numerous Illustrations. Second Edition, carefully revised. Crown 8vo, 3s. 6d. cloth.

"The want of such a guide has long been felt, and that want is here completely supplied."—*Field*.

SPECIFICATIONS FOR PRACTICAL ARCHITECTURE:

A Guide to the Architect, Engineer, Surveyor, and Builder; with an Essay on the Structure and Science of Modern Buildings, on the basis of the old standard work of Bartholomew. By FREDERICK ROGERS, Architect. With numerous Illustrations. Demy 8vo, 15s. cloth.

LONDON: CROSBY LOCKWOOD & CO., 7, STATIONERS' HALL COURT.

Weale's Rudimentary Series.



PHILADELPHIA, 1876.
THE PRIZE MEDAL

Was awarded to the Publishers for
Books: Rudimentary, Scientific,
"WEALE'S SERIES," ETC.



A NEW LIST OF WEALE'S SERIES

RUDIMENTARY SCIENTIFIC, EDUCATIONAL,
AND CLASSICAL.

Comprising nearly Three Hundred and Fifty distinct works in almost every department of Science, Art, and Education, recommended to the notice of Engineers, Architects, Builders, Artisans, and Students generally, as well as to those interested in Workmen's Libraries, Literary and Scientific Institutions, Colleges, Schools, Science Classes, &c., &c.

IS "WEALE'S SERIES includes Text-Books on almost every branch of Science and Industry, comprising such subjects as Agriculture, Architecture and Building, Civil Engineering, Fine Arts, Mechanics and Mechanical Engineering, Physical and Chemical Science, and many miscellaneous Treatises. The whole are constantly undergoing revision, and new editions, brought up to the latest discoveries in scientific research, are constantly issued. The prices at which they are sold are as low as their excellence is assured."—*American Literary Gazette*.

"Amongst the literature of technical education, WEALE'S SERIES has ever enjoyed a high reputation, and the additions being made by Messrs. CROSBY LOCKWOOD & Co. render the series even more complete, and bring the information upon the several subjects down to the present time."—*Mining Journal*.

"It is impossible to do otherwise than bear testimony to the value of WEALE'S SERIES."—*Engineer*.

"Everybody—even that outrageous nuisance 'Every Schoolboy'—knows the merits of 'WEALE'S RUDIMENTARY SERIES.' Any persons wishing to acquire knowledge cannot do better than look through Weale's Series and get all the books they require. The Series is indeed an inexhaustible mine of literary wealth."—*The Metropolitan*.

"WEALE'S SERIES has become a standard as well as an unrivalled collection of treatises in all branches of art and science."—*Public Opinion*.



LONDON, 1862.
THE PRIZE MEDAL

Was awarded to the Publishers of
"WEALE'S SERIES."



CROSBY LOCKWOOD & CO.,

7, STATIONERS' HALL COURT, LUDGATE HILL, LONDON, E.C.


WEALE'S RUDIMENTARY SCIENTIFIC SERIES.



** The volumes of this Series are freely Illustrated with Woodcuts, or otherwise, where requisite. Throughout the following List it must be understood that the books are bound in limp cloth, unless otherwise stated; *but the volumes marked with a ‡ may also be had strongly bound in cloth boards for 6d. extra.*

N.B.—In ordering from this List it is recommended, as a means of facilitating business and obviating error, to quote the numbers affixed to the volumes, as well as the titles and prices.


- ARCHITECTURE, BUILDING, ETC.**
- No. 16. **ARCHITECTURE—ORDERS**—The Orders and their Æsthetic Principles. By W. H. LEEDS. Illustrated. 1s. 6d.
17. **ARCHITECTURE—STYLES**—The History and Description of the Styles of Architecture of Various Countries, from the Earliest to the Present Period. By T. TALBOT BURY, F.R.I.B.A., &c. Illustrated. 2s.
** **ORDERS AND STYLES OF ARCHITECTURE, in One Vol., 3s. 6d.**
18. **ARCHITECTURE—DESIGN**—The Principles of Design in Architecture, as deducible from Nature and exemplified in the Works of the Greek and Gothic Architects. By E. L. GARBETT, Architect. Illustrated. 2s. 6d.
- *. * *The three preceding Works, in One handsome Vol., half bound, entitled "MODERN ARCHITECTURE," price 6s.*
22. **THE ART OF BUILDING**, Rudiments of. General Principles of Construction, Materials used in Building, Strength and Use of Materials, Working Drawings, Specifications, and Estimates. By E. DOBSON, 2s. ‡
23. **BRICKS AND TILES**, Rudimentary Treatise on the Manufacture of; containing an Outline of the Principles of Brickmaking. By EDW. DOBSON, M.R.I.B.A. With Additions by C. TOMLINSON, F.R.S. Illustrated, 3s. ‡
25. **MASONRY AND STONECUTTING**, Rudimentary Treatise on; in which the Principles of Masonic Projection and their application to the Construction of Curved Wing-Walls, Domes, Oblique Bridges, and Roman and Gothic Vaulting, are concisely explained. By EDWARD DOBSON, M.R.I.B.A., &c. Illustrated with Plates and Diagrams. 2s. 6d. ‡
44. **FOUNDATIONS AND CONCRETE WORKS**, a Rudimentary Treatise on; containing a Synopsis of the principal cases of Foundation Works, with the usual Modes of Treatment, and Practical Remarks on Footings, Planking, Sand, Concrete, Béton, Pile-driving, Caissons, and Cofferdams. By E. DOBSON, M.R.I.B.A., &c. Fourth Edition, revised by GEORGE DODD, C.E. Illustrated. 1s. 6d.
42. **COTTAGE BUILDING**. By C. BRUCE ALLEN, Architect. Ninth Edition, revised and enlarged. Numerous Illustrations. 1s. 6d.
45. **LIMES, CEMENTS, MORTARS, CONCRETES, MASTICS, PLASTERING**, &c. By G. R. BURNELL, C.E. Eleventh Edition. 1s. 6d.
57. **WARMING AND VENTILATION**, a Rudimentary Treatise on; being a concise Exposition of the General Principles of the Art of Warming and Ventilating Domestic and Public Buildings, Mines, Lighthouses, Ships, &c. By CHARLES TOMLINSON, F.R.S., &c. Illustrated. 3s.
- 83**. **CONSTRUCTION OF DOOR LOCKS**. Compiled from the Papers of A. C. HOBBS, Esq., of New York, and Edited by CHARLES TOMLINSON, F.R.S. To which is added, a Description of Fenby's Patent Locks, and a Note upon IRON SAFES by ROBERT MALLETT, M.I.C.E. Illus. 2s. 6d.
111. **ARCHES, PIERS, BUTTRESSES, &c.**: Experimental Essays on the Principles of Construction in; made with a view to their being useful to the Practical Builder. By WILLIAM BLAND. Illustrated. 1s. 6d.

 *The ‡ indicates that these vols. may be had strongly bound at 6d. extra.*

LONDON: CROSBY LOCKWOOD AND CO.,

Architecture, Building, etc., *continued.*

116. *THE ACOUSTICS OF PUBLIC BUILDINGS*; or, The Principles of the Science of Sound applied to the purposes of the Architect and Builder. By T. ROGER SMITH, M.R.I.B.A., Architect. Illustrated. 1s. 6d.
124. *CONSTRUCTION OF ROOFS*, Treatise on the, as regards Carpentry and Joinery. Deduced from the Works of ROBISON, PRICE, and TREDGOLD. Illustrated. 1s. 6d.
127. *ARCHITECTURAL MODELLING IN PAPER*, the Art of. By T. A. RICHARDSON, Architect. Illustrated. 1s. 6d.
128. *VITRUVIUS—THE ARCHITECTURE OF MARCUS VITRUVIUS POLLO*. In Ten Books. Translated from the Latin by JOSEPH GWILT, F.S.A., F.R.A.S. With 23 Plates. 5s.
130. *GRECIAN ARCHITECTURE*, An Inquiry into the Principles of Beauty in; with an Historical View of the Rise and Progress of the Art in Greece. By the EARL OF ABERDEEN. 1s.
- *. *The two preceding Works in One handsome Vol., half bound, entitled "ANCIENT ARCHITECTURE," price 6s.*
- 16, 17, 18, 128, and 130, in *One Vol., entitled "ANCIENT AND MODERN ARCHITECTURE," half bound, 12s.*
132. *DWELLING-HOUSES*, a Rudimentary Treatise on the Erection of. Illustrated by a Perspective View, Plans, Elevations, and Sections of a pair of Semi-detached Villas, with the Specification, Quantities, and Estimates, and every requisite detail, in sequence, for their Construction and Finishing. By S. H. BROOKS, Architect. New Edition, with Plates. 2s. 6d.†
156. *QUANTITIES AND MEASUREMENTS*, How to Calculate and Take them in Bricklayers', Masons', Plasterers', Plumbers', Painters', Paper-hangers', Gilders', Smiths', Carpenters', and Joiners' Work. By A. C. BEATON, Architect and Surveyor. New and Enlarged Edition. Illus. 1s. 6d.
175. *LOCKWOOD & CO.'S BUILDER'S AND CONTRACTOR'S PRICE BOOK*, for 1881, containing the latest Prices of all kinds of Builders' Materials and Labour, and of all Trades connected with Building: Lists of the Members of the Metropolitan Board of Works, of Districts, District Officers, and District Surveyors, and the Metropolitan Bye-laws. Edited by FRANCIS T. W. MILLER, Architect and Surveyor. 3s. 6d.; half bound, 4s.
182. *CARPENTRY AND JOINERY—THE ELEMENTARY PRINCIPLES OF CARPENTRY*. Chiefly composed from the Standard Work of THOMAS TREDGOLD, C.E. With Additions from the Works of the most Recent Authorities, and a TREATISE ON JOINERY by E. WYNDHAM TARN, M.A. Numerous Illustrations. 3s. 6d.†
- 182*. *CARPENTRY AND JOINERY. ATLAS* of 35 Plates to accompany the foregoing book. With Descriptive Letterpress. 4to. 6s.; cloth boards, 7s. 6d.
187. *HINTS TO YOUNG ARCHITECTS*. By GEORGE WIGHTWICK. New, Revised, and enlarged Edition. By G. HUSKISSON GUILLAUME, Architect. With numerous Woodcuts. 3s. 6d.†
188. *HOUSE PAINTING, GRAINING, MARBLING, AND SIGN WRITING*: A Practical Manual of, containing full information on the Processes of House-Painting, the Formation of Letters and Practice of Sign-Writing, the Principles of Decorative Art, a Course of Elementary Drawing for House-Painters, Writers, &c., &c. With 9 Coloured Plates of Woods and Marbles, and nearly 150 Wood Engravings. By ELLIS A. DAVIDSON. Third Edition, carefully revised. 5s. cloth limp; 6s. cloth boards.
189. *THE RUDIMENTS OF PRACTICAL BRICKLAYING*. In Six Sections: General Principles; Arch Drawing, Cutting, and Setting; Pointing; Paving, Tiling, Materials; Slating and Plastering; Practical Geometry, Mensuration, &c. By ADAM HAMMOND. Illustrated. 1s. 6d.
191. *PLUMBING*. A Text-Book to the Practice of the Art or Craft of the Plumber. With Chapters upon House Drainage, embodying the latest Improvements, enlarged. Containing 300 Illustrations. By W. P. BUCHAN, Sanitary Engineer. 3s. 6d.†


 The † indicates that these vols. may be had strongly bound at 6d. extra.

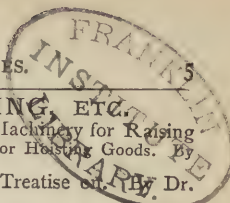
Architecture, Building, etc., *continued.*

192. *THE TIMBER IMPORTER'S, TIMBER MERCHANT'S, and BUILDER'S STANDARD GUIDE*; comprising copious and valuable Memoranda for the Retailer and Builder. By RICHARD E. GRANDY. Second Edition, Revised. 3s.†
205. *THE ART OF LETTER PAINTING MADE EASY.* By J. G. BADENOCH. Illustrated with 12 full-page Engravings of Examples. 1s.
206. *A BOOK ON BUILDING, Civil and Ecclesiastical*, including CHURCH RESTORATION. With the Theory of Domes and the Great Pyramid, &c. By Sir EDMUND BECKETT, Bart., LL.D., Q.C., F.R.A.S. Second Edition, enlarged, 4s. 6d.†

CIVIL ENGINEERING, ETC.


219. *CIVIL ENGINEERING.* By HENRY LAW, M.Inst. C.E. Including a Treatise on HYDRAULIC ENGINEERING by GEO. R. BURNELL, M.Inst.C.E. Sixth Edition, revised, with LARGE ADDITIONS ON RECENT PRACTICE IN CIVIL ENGINEERING, by D. KINNEAR CLARK, M.Inst. C.E., Author of "Tramways: Their Construction," &c. 6s. 6d., Cloth boards, 7s. 6d.
29. *THE DRAINAGE OF DISTRICTS AND LANDS.* By G. DRYSDALE DEMPSEY, C.E. [New Edition in preparation.]
30. *THE DRAINAGE OF TOWNS AND BUILDINGS.* By G. DRYSDALE DEMPSEY, C.E. [New Edition in preparation.]
31. *WELL-DIGGING, BORING, AND PUMP-WORK.* By JOHN GEORGE SWINDELL, A.R.I.B.A. New Edition, by G. R. BURNELL, C.E. 1s. 6d.
35. *THE BLASTING AND QUARRYING OF STONE*, for Building and other Purposes. With Remarks on the Blowing up of Bridges. By Gen. Sir JOHN BURGOYNE, Bart., K.C.B. Illustrated. 1s. 6d.
62. *RAILWAY CONSTRUCTION*, Elementary and Practical Instructions on the Science of. By Sir M. STEPHENSON, C.E. New Edition, by EDWARD NUGENT, C.E. With Statistics of the Capital, Dividends, and Working of Railways in the United Kingdom. By E. D. CHATTAWAY. 4s.
- 80*. *EMBANKING LANDS FROM THE SEA*, the Practice of. Treated as a Means of Profitable Employment for Capital. With Examples and Particulars of actual Embankments, &c. By J. WIGGINS, F.G.S. 2s.
81. *WATER WORKS*, for the Supply of Cities and Towns. With a Description of the Principal Geological Formations of England as influencing Supplies of Water; and Details of Engines and Pumping Machinery for raising Water. By SAMUEL HUGHES, F.G.S., C.E. New Edition. 4s.†
117. *SUBTERRANEAN SURVEYING*, an Elementary and Practical Treatise on. By THOMAS FENWICK. Also the Method of Conducting Subterranean Surveys without the Use of the Magnetic Needle, and other Modern Improvements. By THOMAS BAKER, C.E. Illustrated. 2s. 6d.†
118. *CIVIL ENGINEERING IN NORTH AMERICA*, a Sketch of. By DAVID STEVENSON, F.R.S.E., &c. Plates and Diagrams. 3s.
197. *ROADS AND STREETS (THE CONSTRUCTION OF)*, in two Parts: I. THE ART OF CONSTRUCTING COMMON ROADS, by HENRY LAW, C.E., revised and condensed by D. KINNEAR CLARK, C.E.; II. RECENT PRACTICE, including pavements of Stone, Wood, and Asphalte. Second Edition, revised, by D. K. CLARK, M.I.C.E. 4s. 6d.†
203. *SANITARY WORK IN THE SMALLER TOWNS AND IN VILLAGES.* Comprising:—1. Some of the more Common Forms of Nuisance and their Remedies; 2. Drainage; 3. Water Supply. A useful book for Members of Local Boards and Rural Sanitary Authorities, Health Officers, Engineers, Surveyors, &c. By CHARLES SLAGG, A.I.C.E. 2s. 6d.†
212. *THE CONSTRUCTION OF GAS-WORKS*, and the Manufacture and Distribution of Coal Gas. Originally written by SAMUEL HUGHES, C.E. Sixth Edition, re-written and much Enlarged by WILLIAM RICHARDS, C.E. With 72 Illustrations. 4s. 6d.† [Just published.]
213. *PIONEER ENGINEERING.* A Treatise on the Engineering Operations connected with the Settlement of Waste Lands in New Countries. By EDWARD DOBSON, Assoc. Inst. C.E. 4s. 6d.†

 The † indicates that these vols. may be had strongly bound at 6d. extra.




MECHANICAL ENGINEERING, ETC.

33. *CRANES*, the Construction of, and other Machinery for Raising Heavy Bodies for the Erection of Buildings, and for Hoisting Goods. By JOSEPH GLYNN, F.R.S., &c. Illustrated. 1s. 6d.
34. *THE STEAM ENGINE*, a Rudimentary Treatise on. By Dr. LARDNER. Illustrated. 1s. 6d.
59. *STEAM BOILERS*: their Construction and Management. By R. ARMSTRONG, C.E. Illustrated. 1s. 6d.
67. *CLOCKS, WATCHES, AND BELLS*, a Rudimentary Treatise on. By Sir EDMUND BECKETT (late EDMUND BECKETT DENISON), LL.D., Q.C. A New, Revised, and considerably Enlarged Edition (the 6th), with very numerous Illustrations. 4s. 6d. cloth limp; 5s. 6d. cloth boards, gilt.
82. *THE POWER OF WATER*, as applied to drive Flour Mills, and to give motion to Turbines and other Hydrostatic Engines. By JOSEPH GLYNN, F.R.S., &c. New Edition, Illustrated. 2s. 4.
98. *PRACTICAL MECHANISM*, the Elements of; and Machine Tools. By T. BAKER, C.E. With Remarks on Tools and Machinery, by J. NASMYTH, C.E. Plates. 2s. 6d. 4.
114. *MACHINERY*, Elementary Principles of, in its Construction and Working. By C. D. ABEL, C.E. 1s. 6d.
139. *THE STEAM ENGINE*, a Treatise on the Mathematical Theory of, with Rules and Examples for Practical Men. By T. BAKER, C.E. 1s. 6d.
162. *THE BRASS FOUNDER'S MANUAL*; Instructions for Modelling, Pattern-Making, Moulding, Turning, Filing, Burnishing, Bronzing, &c. With copious Receipts, &c. By WALTER GRAHAM. 2s. 4.
164. *MODERN WORKSHOP PRACTICE*, as applied to Marine, Land, and Locomotive Engines, Floating Docks, Dredging Machines, Bridges, Cranes, Ship-building, &c., &c. By J. G. WINTON. Illustrated. 3s. 4.
165. *IRON AND HEAT*, exhibiting the Principles concerned in the Construction of Iron Beams, Pillars, and Bridge Girders, and the Action of Heat in the Smelting Furnace. By J. ARMOUR, C.E. 2s. 6d. 4.
166. *POWER IN MOTION*: Horse-Power, Toothed-Wheel Gearing, Long and Short Driving Bands, and Angular Forces. By J. ARMOUR, 2s. 6d. 4.
167. *IRON BRIDGES, GIRDERS, ROOFS, AND OTHER WORKS*. By FRANCIS CAMPIN, C.E. 2s. 6d. 4.
171. *THE WORKMAN'S MANUAL OF ENGINEERING DRAWING*. By JOHN MAXTON, Engineer. Fourth Edition. Illustrated with 7 Plates and nearly 350 Woodcuts. 3s. 6d. 4.
190. *STEAM AND THE STEAM ENGINE*, Stationary and Portable. Being an extension of Mr. John Sewell's "Treatise on Steam." By D. K. CLARK, M.I.C.E. Second Edition, revised. 3s. 6d. 4.
200. *FUEL*, its Combustion and Economy. By C. W. WILLIAMS, A.I.C.E. With extensive additions on Recent Practice in the Combustion and Economy of Fuel—Coal, Coke, Wood, Peat, Petroleum, &c.—by D. K. CLARK, M.I.C.E. 2nd Edition. 3s. 6d. 4.
202. *LOCOMOTIVE ENGINES*. By G. D. DEMPSEY, C.E.; with large additions treating of the Modern Locomotive, by D. KINNEAR CLARK, M.I.C.E. 3s. 4.
211. *THE BOILERMAKER'S ASSISTANT* in Drawing, Templating, and Calculating Boiler and Tank Work. By JOHN COURTNEY, Practical Boiler Maker. Edited by D. K. CLARK, C.E. 100 Illustrations. 2s.
216. *MATERIALS AND CONSTRUCTION*; A Theoretical and Practical Treatise on the Strains, Designing, and Erection of Works of Construction. By FRANCIS CAMPIN, C.E. 3s. 4. [Just published.]
217. *SEWING MACHINERY*, being a Practical Manual of the Sewing Machine; comprising its History and Details of its Construction, with full Technical Directions for the Adjusting of Sewing Machines. By J. W. URQUHART, C.E. 2s. 4. [Just published.]
223. *MECHANICAL ENGINEERING*, A Practical Treatise on. Comprising Metallurgy, Moulding, Casting, Forging, Tools, Workshop Machinery, Mechanical Manipulation, Manufacture of the Steam Engine, &c. By FRANCIS CAMPIN, C.E. 2s. 6d. 4. [Just published.]

 The † indicates that these vols. may be had strongly bound at 6d. extra.


SHIPBUILDING, NAVIGATION, MARINE ENGINEERING, ETC.

51. *NAVAL ARCHITECTURE*, the Rudiments of; or an Exposition of the Elementary Principles of the Science, and their Practical Application to Naval Construction. Compiled for the Use of Beginners. By JAMES PEAKE, School of Naval Architecture, H.M. Dockyard, Portsmouth. Fourth Edition, corrected, with Plates and Diagrams. 3s. 6d.†
- 53*. *SHIPS FOR OCEAN AND RIVER SERVICE*, Elementary and Practical Principles of the Construction of. By HAKON A. SOMMERFELDT, Surveyor of the Royal Norwegian Navy. With an Appendix. 1s. 6d.
- 53**. *AN ATLAS OF ENGRAVINGS* to Illustrate the above. Twelve large folding plates. Royal 4to, cloth. 7s. 6d.
54. *MASTING, MAST-MAKING, AND RIGGING OF SHIPS*, Rudimentary Treatise on. Also Tables of Spars, Rigging, Blocks; Chain, Wire, and Hemp Ropes, &c., relative to every class of vessels. With an Appendix of Dimensions of Masts and Yards of the Royal Navy. By ROBERT KIPPING, N.A. Fourteenth Edition. Illustrated. 2s.†
- 54*. *IRON SHIP-BUILDING*. With Practical Examples and Details for the Use of Ship Owners and Ship Builders. By JOHN GRANTHAM, Consulting Engineer and Naval Architect. 5th Edition, with Additions. 4s.
- 54**. *AN ATLAS OF FORTY PLATES* to Illustrate the above. Fifth Edition. Including the latest Examples, such as H.M. Steam Frigates "Warrior," "Hercules," "Bellerophon;" H.M. Troop Ship "Serapis," Iron Floating Dock, &c., &c. 4to, boards. 38s.
55. *THE SAILOR'S SEA BOOK: a Rudimentary Treatise on Navigation*. Part I. How to Keep the Log and Work it off. Part II. On Finding the Latitude and Longitude. By JAMES GREENWOOD, B.A. To which are added, the Deviation and Error of the Compass; Great Circle Sailing; the International (Commercial) Code of Signals; the Rule of the Road at Sea; Rocket and Mortar Apparatus for Saving Life; the Law of Storms; and a Brief Dictionary of Sea Terms. With numerous Woodcuts and Coloured Plates of Flags. New, thoroughly revised and much enlarged edition. By W. H. ROSSER. 2s. 6d.†
80. *MARINE ENGINES, AND STEAM VESSELS*, a Treatise on. Together with Practical Remarks on the Screw and Propelling Power, as used in the Royal and Merchant Navy. By ROBERT MURRAY, C.E., Engineer-Surveyor to the Board of Trade. With a Glossary of Technical Terms, and their Equivalents in French, German, and Spanish. Seventh Edition, revised and enlarged. Illustrated. 3s.†
- 83bis. *THE FORMS OF SHIPS AND BOATS: Hints, Experimentally Derived, on some of the Principles regulating Ship-building*. By W. BLAND. Seventh Edition, revised, with numerous Illustrations and Models. 1s. 6d.
99. *NAVIGATION AND NAUTICAL ASTRONOMY*, in Theory and Practice. With Attempts to facilitate the Finding of the Time and the Longitude at Sea. By J. R. YOUNG, formerly Professor of Mathematics in Belfast College. Illustrated. 2s. 6d.
- 100*. *TABLES* intended to facilitate the Operations of Navigation and Nautical Astronomy, as an Accompaniment to the above Book. By J. R. YOUNG. 1s. 6d.
106. *SHIPS' ANCHORS*, a Treatise on. By G. COTSELL, N.A. 1s. 6d.
149. *SAILS AND SAIL-MAKING*, an Elementary Treatise on. With Draughting, and the Centre of Effort of the Sails. Also, Weights and Sizes of Ropes; Mastings, Rigging, and Sails of Steam Vessels, &c., &c. Eleventh Edition, enlarged, with an Appendix. By ROBERT KIPPING, N.A., Sailmaker, Quayside, Newcastle. Illustrated. 2s. 6d.†
155. *THE ENGINEER'S GUIDE TO THE ROYAL AND MERCANTILE NAVIES*. By a PRACTICAL ENGINEER. Revised by D. F. M'CARTHY, late of the Ordnance Survey Office, Southampton. 3s.
- 55 & 204. *PRACTICAL NAVIGATION*. Consisting of The Sailor's Sea-Book. By JAMES GREENWOOD and W. H. ROSSER. Together with the requisite Mathematical and Nautical Tables for the Working of the Problems. By HENRY LAW, C.E., and J. R. YOUNG, formerly Professor of Mathematics in Belfast College. Illustrated with numerous Wood Engravings and Coloured Plates. 7s. Strongly half-bound in leather.

 The † indicates that these vols. may be had strongly bound at 6d. extra.

PHYSICAL SCIENCE, NATURAL PHILOSOPHY, ETC.

1. *CHEMISTRY*, for the Use of Beginners. By Professor GEORGE FOWNES, F.R.S. With an Appendix on the Application of Chemistry to Agriculture. 1s.
2. *NATURAL PHILOSOPHY*, Introduction to the Study of; for the Use of Beginners. By C. TOMLINSON, Lecturer on Natural Science in King's College School, London. Woodcuts. 1s. 6d.
4. *MINERALOGY*, Rudiments of; a concise View of the Properties of Minerals. By A. RAMSAY, Jun. Woodcuts and Steel Plates. 3s.†
6. *MECHANICS*, Rudimentary Treatise on; being a concise Exposition of the General Principles of Mechanical Science, and their Applications. By CHARLES TOMLINSON. Illustrated. 1s. 6d.
7. *ELECTRICITY*; showing the General Principles of Electrical Science, and the purposes to which it has been applied. By Sir W. SNOW HARRIS, F.R.S., &c. With Additions by R. SABINE, C.E., F.S.A. 1s. 6d.
- 7*. *GALVANISM*, Rudimentary Treatise on, and the General Principles of Animal and Voltaic Electricity. By Sir W. SNOW HARRIS. New Edition, with considerable Additions by ROBERT SABINE, C.E., F.S.A. 1s. 6d.
8. *MAGNETISM*; being a concise Exposition of the General Principles of Magnetical Science, and the Purposes to which it has been applied. By Sir W. SNOW HARRIS. New Edition, revised and enlarged by H. M. NOAD, Ph.D., Vice-President of the Chemical Society, Author of "A Manual of Electricity," &c., &c. With 165 Woodcuts. 3s. 6d.†
11. *THE ELECTRIC TELEGRAPH*; its History and Progress; with Descriptions of some of the Apparatus. By R. SABINE, C.E., F.S.A. 3s.
12. *PNEUMATICS*, for the Use of Beginners. By CHARLES TOMLINSON. Illustrated. 1s. 6d.
72. *MANUAL OF THE MOLLUSCA*; a Treatise on Recent and Fossil Shells. By Dr. S. P. WOODWARD, A.L.S. Fourth Edition. With Appendix by RALPH TATE, A.L.S., F.G.S. With numerous Plates and 300 Woodcuts. 6s. 6d. Cloth boards, 7s. 6d.
- 79**. *PHOTOGRAPHY*, Popular Treatise on; with a Description of the Stereoscope, &c. Translated from the French of D. VAN MONCKHOVEN, by W. H. THORNTWHAITE, Ph.D. Woodcuts. 1s. 6d.
96. *ASTRONOMY*. By the Rev. R. MAIN, M.A., F.R.S., &c. New Edition, with an Appendix on "Spectrum Analysis." Woodcuts. 1s. 6d.
97. *STATICS AND DYNAMICS*, the Principles and Practice of; embracing also a clear development of Hydrostatics, Hydrodynamics, and Central Forces. By T. BAKER, C.E. 1s. 6d.
138. *TELEGRAPH*, Handbook of the; a Manual of Telegraphy, Telegraph Clerks' Remembrancer, and Guide to Candidates for Employment in the Telegraph Service. By R. BOND. Fourth Edition, revised and enlarged: to which is appended, QUESTIONS on MAGNETISM, ELECTRICITY, and PRACTICAL TELEGRAPHY, for the Use of Students, by W. MCGREGOR, First Assistant Supnt., Indian Gov. Telegraphs. 3s.†
143. *EXPERIMENTAL ESSAYS*. By CHARLES TOMLINSON. I. On the Motions of Camphor on Water. II. On the Motion of Camphor towards the Light. III. History of the Modern Theory of Dew. Woodcuts. 1s.
173. *PHYSICAL GEOLOGY*, partly based on Major-General PORTLOCK's "Rudiments of Geology." By RALPH TATE, A.L.S., &c. Woodcuts. 2s.
174. *HISTORICAL GEOLOGY*, partly based on Major-General PORTLOCK's "Rudiments." By RALPH TATE, A.L.S., &c. Woodcuts. 2s. 6d.
173. *RUDIMENTARY TREATISE ON GEOLOGY*, Physical and Historical. Partly based on Major-General PORTLOCK's "Rudiments of Geology." By RALPH TATE, A.L.S., F.G.S., &c. In One Volume. 4s. 6d.†
174. *ANIMAL PHYSICS*, Handbook of. By Dr. LARDNER, D.C.L., & formerly Professor of Natural Philosophy and Astronomy in University College, Lond. With 520 Illustrations. In One Vol. 7s. 6d., cloth boards.
184. *ANIMAL PHYSICS*. By Dr. LARDNER. Part I., Chapters I.—VII. 4s.
184. *ANIMAL PHYSICS*. By Dr. LARDNER. Part II., Chapters VIII.—XVIII. 3s.


 The † indicates that these vols. may be had strongly bound at 6d. extra.

MINING, METALLURGY, ETC.

117. *SUBTERRANEAN SURVEYING*, Elementary and Practical Treatise on, with and without the Magnetic Needle. By THOMAS FENWICK, Surveyor of Mines, and THOMAS BAKER, C.E. Illustrated. 2s. 6d.†
133. *METALLURGY OF COPPER*; an Introduction to the Methods of Seeking, Mining, and Assaying Copper, and Manufacturing its Alloys. By ROBERT H. LAMBORN, Ph.D. Woodcuts. 2s. 6d.†
134. *METALLURGY OF SILVER AND LEAD*. A Description of the Ores; their Assay and Treatment, and valuable Constituents. By Dr. R. H. LAMBORN. Woodcuts. 2s. 6d.†
135. *ELECTRO-METALLURGY*; Practically Treated. By ALEXANDER WATT, F.R.S.S.A. 7th Edition, revised, with important additions, including the Electro-Deposition of Nickel, &c. Woodcuts. 3s.†
172. *MINING TOOLS*, Manual of. For the Use of Mine Managers, Agents, Students, &c. By WILLIAM MORGANS. 2s. 6d.†
- 172*. *MINING TOOLS, ATLAS* of Engravings to Illustrate the above, containing 235 Illustrations, drawn to Scale. 4to. 4s. 6d.; cloth boards, 6s.
176. *METALLURGY OF IRON*. Containing History of Iron Manufacture, Methods of Assay, and Analyses of Iron Ores, Processes of Manufacture of Iron and Steel, &c. By H. BAUERMAN, F.G.S. 4th Edition. 4s. 6d.†
180. *COAL AND COAL MINING*, A Rudimentary Treatise on. By WARINGTON W. SMYTH, M.A., F.R.S. Fifth Edition, revised and enlarged. With numerous Illustrations. 3s. 6d.† [Just published.]
195. *THE MINERAL SURVEYOR AND VALUER'S COMPLETE GUIDE*, with new Traverse Tables, and Descriptions of Improved Instruments; also the Correct Principles of Laying out and Valuing Mineral Properties. By WILLIAM LINTERN, Mining and Civil Engineer. 3s. 6d.†
214. *SLATE AND SLATE QUARRYING*, Scientific, Practical, and Commercial. By D. C. DAVIES, F.G.S., Mining Engineer, &c. With numerous Illustrations and Folding Plates. 3s.†
215. *THE GOLDSMITH'S HANDBOOK*, containing full Instructions for the Alloying and Working of Gold, including the Art of Alloying, Melting, Reducing, Colouring, Collecting, and Refining; Chemical and Physical Properties of Gold; with a New System of Mixing its Alloys; Solders, Enamels, &c. By GEORGE E. GEE, Goldsmith and Silversmith. Second Edition, considerably enlarged. 3s.† [Just published.]
- THE SILVERSMITH'S HANDBOOK*, containing full Instructions for the Alloying and Working of Silver. By GEORGE E. GEE. 3s.†
220. *MAGNETIC SURVEYING, AND ANGULAR SURVEYING*, with Records of the Peculiarities of Needle Disturbances. Compiled from the Results of carefully made Experiments. By WILLIAM LINTERN, Mining and Civil Engineer and Surveyor. 2s. [Just published.]

FINE ARTS.

20. *PERSPECTIVE FOR BEGINNERS*. Adapted to Young Students and Amateurs in Architecture, Painting, &c. By GEORGE PYNE. 2s.
40. *GLASS STAINING*; or, The Art of Painting on Glass. From the German of Dr. GESSERT. With an Appendix on THE ART OF ENAMELING, &c.; together with THE ART OF PAINTING ON GLASS. From the German of EMANUEL OTTO FROMBERG. In One Volume. 2s. 6d.
41. *MUSIC*, A Rudimentary and Practical Treatise on. With numerous Examples. By CHARLES CHILD SPENCER. 2s. 6d.
71. *PIANOFORTE*, The Art of Playing the. With numerous Exercises & Lessons. From the Best Masters, by CHARLES CHILD SPENCER. 1s. 6d.
181. *PAINTING POPULARLY EXPLAINED*, including Fresco, Oil, Mosaic, Water Colour, Water-Glass, Tempera, Encaustic, Miniature, Painting on Ivory, Vellum, Pottery, Enamel, Glass, &c. With Historical Sketches of the Progress of the Art by THOMAS JOHN GULLICK, assisted by JOHN TIMBS, F.S.A. Fourth Edition, revised and enlarged. 5s.†
186. *A GRAMMAR OF COLOURING*, applied to Decorative Painting and the Arts. By GEORGE FIELD. New Edition, enlarged and adapted to the Use of the Ornamental Painter and Designer. By ELLIS A. DAVIDSON. With two new Coloured Diagrams, &c. 3s.†

 The † indicates that these vols. may be had strongly bound at 6d. extra.


AGRICULTURE, GARDENING, ETC.

29. *THE DRAINAGE OF DISTRICTS AND STANDS.* By G. DRYSDALE DEMPSEY, C.E. [New Edition in preparation.]
66. *CLAY LANDS & LOAMY SOILS.* By PROF. DONALDSON. 1s.
131. *MILLER'S, MERCHANT'S, AND FARMER'S READY RECKONER*, for ascertaining at sight the value of any quantity of Corn, from One Bushel to One Hundred Quarters, at any given price, from £1 to £5 per Qr. With approximate values of Millstones, Millwork, &c. 1s.
140. *SOILS, MANURES, AND CROPS.* (Vol. 1. OUTLINES OF MODERN FARMING.) By R. SCOTT BURN. Woodcuts. 2s.
141. *FARMING & FARMING ECONOMY*, Notes, Historical and Practical, on. (Vol. 2. OUTLINES OF MODERN FARMING.) By R. SCOTT BURN. 3s.
142. *STOCK; CATTLE, SHEEP, AND HORSES.* (Vol. 3. OUTLINES OF MODERN FARMING.) By R. SCOTT BURN. Woodcuts. 2s. 6d.
145. *DAIRY, PIGS, AND POULTRY*, Management of the. By R. SCOTT BURN. With Notes on the Diseases of Stock. (Vol. 4. OUTLINES OF MODERN FARMING.) Woodcuts. 2s.
146. *UTILIZATION OF SEWAGE, IRRIGATION, AND RECLAMATION OF WASTE LAND.* (Vol. 5. OUTLINES OF MODERN FARMING.) By R. SCOTT BURN. Woodcuts. 2s. 6d.
- * Nos. 140-1-2-5-6, in One Vol., handsomely half-bound, entitled "OUTLINES OF MODERN FARMING." By ROBERT SCOTT BURN. Price 12s.
177. *FRUIT TREES*, The Scientific and Profitable Culture of. From the French of DU BREUIL. Revised by GEO. GLENNY. 187 Woodcuts. 3s. 6d.†
198. *SHEEP; THE HISTORY, STRUCTURE, ECONOMY, AND DISEASES OF.* By W. C. SPOONER, M.R.V.C., &c. Fourth Edition, considerably enlarged; with numerous fine engravings, including some specimens of New and Improved Breeds. 366 pp. 3s. 6d.†
201. *KITCHEN GARDENING MADE EASY.* Showing how to prepare and lay out the ground, the best means of cultivating every known Vegetable and Herb, with cultural directions for the management of them all the year round. By GEORGE M.F. GLENNY, Author of "Floriculture," &c. 1s. 6d.†
207. *OUTLINES OF FARM MANAGEMENT, and the Organization of Farm Labour*: Treating of the General Work of the Farm; Field and Live Stock; Details of Contract Work; Specialities of Labour; Economical Management of the Farmhouse and Cottage, and their Domestic Animals. By ROBERT SCOTT BURN. 2s. 6d.† [Just published.]
208. *OUTLINES OF LANDED ESTATES MANAGEMENT*: Treating of the Varieties of Lands, Methods of Farming, Farm Buildings, Irrigation, Drainage, &c. By R. SCOTT BURN. 2s. 6d.†
- * Nos. 207 & 208 in One Vol., handsomely half-bound, entitled "OUTLINES OF LANDED ESTATES AND FARM MANAGEMENT." By R. SCOTT BURN. Price 6s.
209. *THE TREE PLANTER AND PLANT PROPAGATOR*: Being a Practical Manual on the Propagation of Forest Trees, Fruit Trees, Flowering Shrubs, Flowering Plants, Pot-Herbs, &c.; with numerous Illustrations of Grafting, Layering, Budding, Cuttings, &c., Useful Implements, Houses, Pits, &c. By SAMUEL WOOD. 2s.† [Just published.]
210. *THE TREE PRUNER*: Being a Practical Manual on the Pruning of Fruit Trees, including also their Training and Renovation; also treating of the Pruning of Shrubs, Climbers and Flowering Plants. By SAMUEL WOOD. 2s.† [Just published.]
- * Nos. 209 & 210 in One Vol., handsomely half-bound, entitled "THE TREE PLANTER, PROPAGATOR AND PRUNER." By SAMUEL WOOD. Price 5s.
219. *THE HAY AND STRAW MEASURER*: Being New Tables for the Use of Auctioneers, Valuers, Farmers, Hay and Straw Dealers, &c., forming a complete Calculator and Ready-Reckoner, especially adapted to persons connected with Agriculture. Third Edition. By JOHN STEELE. 2s.
222. *SUBURBAN FARMING.* The Laying-out and Cultivation of Farms, adapted to the Produce of Milk, Butter, and Cheese, Eggs, Poultry, and Pigs. By the late Prof. JOHN DONALDSON. With Additions by R. SCOTT BURN. Second Edition. 3s. 6d.† [Just published.]

The † indicates that these vols. may be had strongly bound at 6d. extra.


ARITHMETIC, GEOMETRY, MATHEMATICS, ETC.

32. *MATHEMATICAL INSTRUMENTS*, a Treatise on; in which their Construction and the Methods of Testing, Adjusting, and Using them are concisely Explained. By J. F. HEATHER, M.A., of the Royal Military Academy, Woolwich. Original Edition, in 1 vol., Illustrated. 1s. 6d.
- * * *In ordering the above, be careful to say, "Original Edition" (No. 32), to distinguish it from the Enlarged Edition in 3 vols. (Nos. 168-9-70.)*
60. *LAND AND ENGINEERING SURVEYING*, a Treatise on; with all the Modern Improvements. Arranged for the Use of Schools and Private Students; also for Practical Land Surveyors and Engineers. By T. BAKER, C.E. New Edition, revised by EDWARD NUGENT, C.E. Illustrated with Plates and Diagrams. 2s. 4d.
- 61*. *READY RECKONER FOR THE ADMEASUREMENT OF LAND*. By ABRAHAM ARMAN, Schoolmaster, Thurleigh, Beds. To which is added a Table, showing the Price of Work, from 2s. 6d. to £1 per acre, and Tables for the Valuation of Land, from 1s. to £1,000 per acre, and from one pole to two thousand acres in extent, &c., &c. 1s. 6d.
76. *DESCRIPTIVE GEOMETRY*, an Elementary Treatise on; with a Theory of Shadows and of Perspective, extracted from the French of G. MONGE. To which is added, a description of the Principles and Practice of Isometrical Projection; the whole being intended as an introduction to the Application of Descriptive Geometry to various branches of the Arts. By J. F. HEATHER, M.A. Illustrated with 14 Plates. 2s.
178. *PRACTICAL PLANE GEOMETRY*: giving the Simplest Modes of Constructing Figures contained in one Plane and Geometrical Construction of the Ground. By J. F. HEATHER, M.A. With 215 Woodcuts. 2s.
179. *PROJECTION*: Orthographic, Topographic, and Perspective: giving the various Modes of Delineating Solid Forms by Constructions on a Single Plane Surface. By J. F. HEATHER, M.A. [*In preparation.*]
- * * *The above three volumes will form a COMPLETE ELEMENTARY COURSE OF MATHEMATICAL DRAWING.*
83. *COMMERCIAL BOOK-KEEPING*. With Commercial Phrases and Forms in English, French, Italian, and German. By JAMES HADDON, M.A., Arithmetical Master of King's College School, London. 1s. 6d.
84. *ARITHMETIC*, a Rudimentary Treatise on: with full Explanations of its Theoretical Principles, and numerous Examples for Practice. For the Use of Schools and for Self-Instruction. By J. R. YOUNG, late Professor of Mathematics in Belfast College. New Edition, with Index. 1s. 6d.
- 84*. A KEY to the above, containing Solutions in full to the Exercises, together with Comments, Explanations, and Improved Processes, for the Use of Teachers and Unassisted Learners. By J. R. YOUNG. 1s. 6d.
85. *EQUATIONAL ARITHMETIC*, applied to Questions of Interest,
- 85*. Annuities, Life Assurance, and General Commerce; with various Tables by which all Calculations may be greatly facilitated. By W. HIPSLEY. 2s.
86. *ALGEBRA*, the Elements of. By JAMES HADDON, M.A., Second Mathematical Master of King's College School. With Appendix, containing miscellaneous Investigations, and a Collection of Problems in various parts of Algebra. 2s.
- 86*. A KEY and COMPANION to the above Book, forming an extensive repository of Solved Examples and Problems in Illustration of the various Expedients necessary in Algebraical Operations. Especially adapted for Self-Instruction. By J. R. YOUNG. 1s. 6d.
88. *EUCLID, THE ELEMENTS OF*: with many additional Propositions
89. and Explanatory Notes; to which is prefixed, an Introductory Essay on Logic. By HENRY LAW, C.E. 2s. 6d. ‡
- * * *Sold also separately, viz. :—*
88. *EUCLID, The First Three Books*. By HENRY LAW, C.E. 1s. 6d.
89. *EUCLID, Books 4, 5, 6, 11, 12*. By HENRY LAW, C.E. 1s. 6d.

 The ‡ indicates that these vols. may be had strongly bound at 6d. extra.

Arithmetic, Geometry, Mathematics, etc., *continued.*

90. *ANALYTICAL GEOMETRY AND CONIC SECTIONS*, a Rudimentary Treatise on. By JAMES HANN, late Mathematical Master of King's College School, London. A New Edition, re-written and enlarged by J. R. YOUNG, formerly Professor of Mathematics at Belfast College. 2s.†
91. *PLANE TRIGONOMETRY*, the Elements of. By JAMES HANN, formerly Mathematical Master of King's College, London. 1s. 6d.
92. *SPHERICAL TRIGONOMETRY*, the Elements of. By JAMES HANN. Revised by CHARLES H. DOWLING, C.E. 1s.
 * * Or with "*The Elements of Plane Trigonometry*," in *One Volume*, 2s. 6d.
93. *MENSURATION AND MEASURING*, for Students and Practical Use. With the Mensuration and Levelling of Land for the Purposes of Modern Engineering. By T. BAKER, C.E. New Edition, with Corrections and Additions by E. NUGENT, C.E. Illustrated. 1s. 6d.
102. *INTEGRAL CALCULUS*, Rudimentary Treatise on the. By HOMERSHAM COX, B.A. Illustrated. 1s.
103. *INTEGRAL CALCULUS*, Examples on the. By JAMES HANN, late of King's College, London. Illustrated. 1s.
101. *DIFFERENTIAL CALCULUS*, Elements of the. By W. S. B. WOOLHOUSE, F.R.A.S., &c. 1s. 6d.
105. *MNEMONICAL LESSONS*. — GEOMETRY, ALGEBRA, AND TRIGONOMETRY, in Easy Mnemonical Lessons. By the Rev. THOMAS PENYNGTON KIRKMAN, M.A. 1s. 6d.
136. *ARITHMETIC*, Rudimentary, for the Use of Schools and Self-Instruction. By JAMES HADDON, M.A. Revised by ABRAHAM ARMAN. 1s. 6d.
137. A KEY TO HADDON'S RUDIMENTARY ARITHMETIC. By A. ARMAN. 1s. 6d.
168. *DRAWING AND MEASURING INSTRUMENTS*. Including—I. Instruments employed in Geometrical and Mechanical Drawing, and in the Construction, Copying, and Measurement of Maps and Plans. II. Instruments used for the purposes of Accurate Measurement, and for Arithmetical Computations. By J. F. HEATHER, M.A., late of the Royal Military Academy, Woolwich, Author of "*Descriptive Geometry*," &c., &c. Illustrated. 1s. 6d.
169. *OPTICAL INSTRUMENTS*. Including (more especially) Telescopes, Microscopes, and Apparatus for producing copies of Maps and Plans by Photography. By J. F. HEATHER, M.A. Illustrated. 1s. 6d.
170. *SURVEYING AND ASTRONOMICAL INSTRUMENTS*. Including—I. Instruments Used for Determining the Geometrical Features of a portion of Ground. II. Instruments Employed in Astronomical Observations. By J. F. HEATHER, M.A. Illustrated. 1s. 6d.
- * * *The above three volumes form an enlargement of the Author's original work, "Mathematical Instruments: their Construction, Adjustment, Testing, and Use," the Thirteenth Edition of which is on sale, price 1s. 6d. (See No. 32 in the Series.)*
168. } *MATHEMATICAL INSTRUMENTS*. By J. F. HEATHER,
 169. } M.A. Enlarged Edition, for the most part entirely re-written. The 3 Parts as
 170. } above, in One thick Volume. With numerous Illustrations. 4s. 6d.†
158. *THE SLIDE RULE, AND HOW TO USE IT*; containing full, easy, and simple Instructions to perform all Business Calculations with unexampled rapidity and accuracy. By CHARLES HOARE, C.E. With a Slide Rule in tuck of cover. 2s. 6d.†
185. *THE COMPLETE MEASURER*; setting forth the Measurement of Boards, Glass, &c., &c.; Unequal-sided, Square-sided, Octagonal-sided, Round Timber and Stone, and Standing Timber. With a Table showing the solidity of hewn or eight-sided timber, or of any octagonal-sided column. Compiled for Timber-growers, Merchants, and Surveyors, Stonemasons, Architects, and others. By RICHARD HORTON. Third Edition, with valuable additions. 4s.; strongly bound in leather, 5s.
196. *THEORY OF COMPOUND INTEREST AND ANNUITIES*; with Tables of Logarithms for the more Difficult Computations of Interest, Discount, Annuities, &c. By FÉDOR THOMAN. 4s.†

 The † indicates that these vols. may be had strongly bound at 6d. extra.

7, STATIONERS' HALL COURT, LUDGATE HILL, E.C.

Arithmetic, Geometry, Mathematics, etc., *continued.*

199. *INTUITIVE CALCULATIONS*; or, Easy and Compendious Methods of Performing the various Arithmetical Operations required in Commercial and Business Transactions; together with Full Explanations of Decimals and Duodecimals, several Useful Tables, &c. By DANIEL O'GORMAN. Twenty-fifth Edition, corrected and enlarged by J. R. YOUNG, formerly Professor of Mathematics in Belfast College. 3s.†
204. *MATHEMATICAL TABLES*, for Trigonometrical, Astronomical, and Nautical Calculations; to which is prefixed a Treatise on Logarithms. By HENRY LAW, C.E. Together with a Series of Tables for Navigation and Nautical Astronomy. By J. R. YOUNG, formerly Professor of Mathematics in Belfast College. New Edition. 3s. 6d.†
221. *MEASURES, WEIGHTS, AND MONEYS OF ALL NATIONS*, and an Analysis of the Christian, Hebrew, and Mahometan Calendars. By W. S. B. WOOLHOUSE, F.R.A.S., F.S.S. Sixth Edition, carefully revised and enlarged. 2s.† [Just published.]

MISCELLANEOUS VOLUMES.

36. *A DICTIONARY OF TERMS used in ARCHITECTURE, BUILDING, ENGINEERING, MINING, METALLURGY, ARCHÆOLOGY, the FINE ARTS, &c.* By JOHN WEALE. Fifth Edition. Revised by ROBERT HUNT, F.R.S., Keeper of Mining Records. Numerous Illustrations. 5s. cloth limp; 6s. cloth boards.
50. *THE LAW OF CONTRACTS FOR WORKS AND SERVICES.* By DAVID GIBBONS. Third Edition, enlarged. 3s.†
112. *MANUAL OF DOMESTIC MEDICINE.* By R. GOODING, B.A., M.D. Intended as a Family Guide in all Cases of Accident and Emergency. 2s.†
- 112*. *MANAGEMENT OF HEALTH.* A Manual of Home and Personal Hygiene. By the Rev. JAMES BAIRD, B.A. 1s.
150. *LOGIC*, Pure and Applied. By S. H. EMMENS. 1s. 6d.
152. *PRACTICAL HINTS FOR INVESTING MONEY.* With an Explanation of the Mode of Transacting Business on the Stock Exchange. By FRANCIS PLAYFORD, Sworn Broker. 1s. 6d.
153. *SELECTIONS FROM LOCKE'S ESSAYS ON THE HUMAN UNDERSTANDING.* With Notes by S. H. EMMENS. 2s.
154. *GENERAL HINTS TO EMIGRANTS.* Containing Notices of the various Fields for Emigration. With Hints on Preparation for Emigrating, Outfits, &c., &c. With Directions and Recipes useful to the Emigrant. With a Map of the World. 2s.
157. *THE EMIGRANT'S GUIDE TO NATAL.* By ROBERT JAMES MANN, F.R.A.S., F.M.S. Second Edition, carefully corrected to the present Date. Map. 2s.
193. *HANDBOOK OF FIELD FORTIFICATION*, intended for the Guidance of Officers Preparing for Promotion, and especially adapted to the requirements of Beginners. By Major W. W. KNOLLYS, F.R.G.S., 93rd Sutherland Highlanders, &c. With 163 Woodcuts. 3s.†
194. *THE HOUSE MANAGER*: Being a Guide to Housekeeping. Practical Cookery, Pickling and Preserving, Household Work, Dairy Management, the Table and Dessert, Cellarage of Wines, Home-brewing and Wine-making, the Boudoir and Dressing-room, Travelling, Stable Economy, Gardening Operations, &c. By AN OLD HOUSEKEEPER. 3s. 6d.†
194. *HOUSE BOOK (The)*. Comprising:—I. THE HOUSE MANAGER. II. By AN OLD HOUSEKEEPER. II. DOMESTIC MEDICINE. By RALPH GOODING, M.D. III. MANAGEMENT OF HEALTH. By JAMES BAIRD. In One Vol., & strongly half-bound. 6s.
- 112*.
224. *COACH BUILDING*, A Practical Treatise, Historical and Descriptive, containing full information of the various Trades and Processes involved, with Hints on the proper Keeping of Carriages, &c. With 57 Illustrations. By JAMES W. BURGESS. 2s. 6d.† [Just published.]



The † indicates that these vols. may be had strongly bound at 6d. extra.

EDUCATIONAL AND CLASSICAL SERIES.

HISTORY.

1. England, Outlines of the History of; more especially with reference to the Origin and Progress of the English Constitution. By WILLIAM DOUGLAS HAMILTON, F.S.A., of Her Majesty's Public Record Office. 4th Edition, revised. 5s.; cloth boards, 6s.
5. Greece, Outlines of the History of; in connection with the Rise of the Arts and Civilization in Europe. By W. DOUGLAS HAMILTON, of University College, London, and EDWARD LEVIEN, M.A., of Balliol College, Oxford. 2s. 6d.; cloth boards, 3s. 6d.
7. Rome, Outlines of the History of: from the Earliest Period to the Christian Era and the Commencement of the Decline of the Empire. By EDWARD LEVIEN, of Balliol College, Oxford. Map, 2s. 6d.; cl. bds. 3s. 6d.
9. Chronology of History, Art, Literature, and Progress, from the Creation of the World to the Conclusion of the Franco-German War. The Continuation by W. D. HAMILTON, F.S.A. 3s.; cloth boards, 3s. 6d.
50. Dates and Events in English History, for the use of Candidates in Public and Private Examinations. By the Rev. E. RAND. 1s.

ENGLISH LANGUAGE AND MISCELLANEOUS.

11. Grammar of the English Tongue, Spoken and Written. With an Introduction to the Study of Comparative Philology. By HYDE CLARKE, D.C.L. Fourth Edition. 1s. 6d.
- 11*. Philology: Handbook of the Comparative Philology of English, Anglo-Saxon, Frisian, Flemish or Dutch, Low or Platt Dutch, High Dutch or German, Danish, Swedish, Icelandic, Latin, Italian, French, Spanish, and Portuguese Tongues. By HYDE CLARKE, D.C.L. 1s.
12. Dictionary of the English Language, as Spoken and Written. Containing above 100,000 Words. By HYDE CLARKE, D.C.L. 3s. 6d.; cloth boards, 4s. 6d.; complete with the GRAMMAR, cloth bds., 5s. 6d.
48. Composition and Punctuation, familiarly Explained for those who have neglected the Study of Grammar. By JUSTIN BRENNAN. 17th Edition. 1s. 6d.
49. Derivative Spelling-Book: Giving the Origin of Every Word from the Greek, Latin, Saxon, German, Teutonic, Dutch, French, Spanish, and other Languages; with their present Acceptation and Pronunciation. By J. ROWBOTHAM, F.R.A.S. Improved Edition. 1s. 6d.
51. The Art of Extempore Speaking: Hints for the Pulpit, the Senate, and the Bar. By M. BAUTAIN, Vicar-General and Professor at the Sorbonne. Translated from the French. 7th Edition, carefully corrected. 2s. 6d.
52. Mining and Quarrying, with the Sciences connected therewith. First Book of, for Schools. By J. H. COLLINS, F.G.S., Lecturer to the Miners' Association of Cornwall and Devon. 1s.
53. Places and Facts in Political and Physical Geography, for Candidates in Examinations. By the Rev. EDGAR RAND, B.A. 1s.
54. Analytical Chemistry, Qualitative and Quantitative, a Course of. To which is prefixed, a Brief Treatise upon Modern Chemical Nomenclature and Notation. By WM. W. PINK and GEORGE E. WEBSTER. 2s.

THE SCHOOL MANAGERS' SERIES OF READING BOOKS,

Adapted to the Requirements of the New Code. Edited by the Rev. A. R. GRANT, Rector of Hitcham, and Honorary Canon of Ely; formerly H.M. Inspector of Schools.

INTRODUCTORY PRIMER, 3d.

	s.	d.		s.	d.
FIRST STANDARD	0	6	FOURTH STANDARD	1	2
SECOND	0	10	FIFTH	1	6
THIRD	1	0	SIXTH	1	6

LESSONS FROM THE BIBLE. Part I. Old Testament. 1s.

LESSONS FROM THE BIBLE. Part II. New Testament, to which is added

THE GEOGRAPHY OF THE BIBLE, for very young Children. By Rev. C. THORNTON FORSTER. 1s. 2d. ** Or the Two Parts in One Volume. 2s.

FRENCH.

24. French Grammar. With Complete and Concise Rules on the Genders of French Nouns. By G. L. STRAUSS, Ph.D. 1s. 6d.
 25. French-English Dictionary. Comprising a large number of New Terms used in Engineering, Mining, &c. By ALFRED ELWES. 1s. 6d.
 26. English French Dictionary. By ALFRED ELWES. 2s.
 25,26. French Dictionary (as above). Complete, in One Vol., 3s.; cloth boards, 3s. 6d. * * Or with the GRAMMAR, cloth boards, 4s. 6d.
 47. French and English Phrase Book: containing Introductory Lessons, with Translations, several Vocabularies of Words, a Collection of suitable Phrases, and Easy Familiar Dialogues. 1s. 6d.

GERMAN.

39. German Grammar. Adapted for English Students, from Heyso's Theoretical and Practical Grammar, by Dr. G. L. STRAUSS. 1s.
 40. German Reader: A Series of Extracts, carefully culled from the most approved Authors of Germany; with Notes, Philological and Explanatory. By G. L. STRAUSS, Ph.D. 1s.
 41-43. German Triglot Dictionary. By NICHOLAS ESTERHAZY S. A. HAMILTON. In Three Parts. Part I. German-French-English. Part II. English-German-French. Part III. French-German-English. 3s., or cloth boards, 4s.
 41-43. German Triglot Dictionary (as above), together with German & 39. Grammar (No. 39), in One Volume, cloth boards, 5s.

ITALIAN.

27. Italian Grammar, arranged in Twenty Lessons, with a Course of Exercises. By ALFRED ELWES. 1s. 6d.
 28. Italian Triglot Dictionary, wherein the Genders of all the Italian and French Nouns are carefully noted down. By ALFRED ELWES. Vol. 1. Italian-English-French. 2s. 6d.
 30. Italian Triglot Dictionary. By A. ELWES. Vol. 2. English-French-Italian. 2s. 6d.
 32. Italian Triglot Dictionary. By ALFRED ELWES. Vol. 3. French-Italian-English. 2s. 6d.
 28,30. Italian Triglot Dictionary (as above). In One Vol., 7s. 6d.
 32. Cloth boards.

SPANISH AND PORTUGUESE.

34. Spanish Grammar, in a Simple and Practical Form. With a Course of Exercises. By ALFRED ELWES. 1s. 6d.
 35. Spanish-English and English-Spanish Dictionary. Including a large number of Technical Terms used in Mining, Engineering, &c., with the proper Accents and the Gender of every Noun. By ALFRED ELWES. 4s.; cloth boards, 5s. * * Or with the GRAMMAR, cloth boards, 6s.
 55. Portuguese Grammar, in a Simple and Practical Form. With a Course of Exercises. By ALFRED ELWES. 1s. 6d.
 56. Portuguese-English and English-Portuguese Dictionary, with the Genders of each Noun. By ALFRED ELWES.

[In preparation.]

HEBREW.

- 46*. Hebrew Grammar. By Dr. BRESSLAU. 1s. 6d.
 44. Hebrew and English Dictionary, Biblical and Rabbinical; containing the Hebrew and Chaldee Roots of the Old Testament Post-Rabbinical Writings. By Dr. BRESSLAU. 6s. * * Or with the GRAMMAR, 7s.
 46. English and Hebrew Dictionary. By Dr. BRESSLAU. 3s.
 44,46. Hebrew Dictionary (as above), in Two Vols., complete, with 46*. the GRAMMAR, cloth boards, 12s.

LATIN.

19. **Latin Grammar.** Containing the Inflections and Elementary Principles of Translation and Construction. By the Rev. THOMAS GOODWIN, M.A., Head Master of the Greenwich Proprietary School. 1s.
20. **Latin-English Dictionary.** By the Rev. THOMAS GOODWIN, M.A. 2s.
22. **English-Latin Dictionary;** together with an Appendix of French and Italian Words which have their origin from the Latin. By the Rev. THOMAS GOODWIN, M.A. 1s. 6d.
- 20, 22. **Latin Dictionary** (as above). Complete in One Vol., 3s. 6d.; cloth boards, 4s. 6d. * * Or with the GRAMMAR, cloth boards, 5s. 6d.

LATIN CLASSICS. With Explanatory Notes in English.

1. **Latin Delectus.** Containing Extracts from Classical Authors, with Genealogical Vocabularies and Explanatory Notes, by H. YOUNG. 1s. 6d.
2. **Cæsar's Commentarii de Bello Gallico.** Notes, and a Geographical Register for the Use of Schools, by H. YOUNG. 2s.
3. **Cornelius Nepos.** With Notes. By H. YOUNG. 1s.
4. **Virgilii Maronis Bucolica et Georgica.** With Notes on the Bucolics by W. RUSHTON, M.A., and on the Georgics by H. YOUNG. 1s. 6d.
5. **Virgilii Maronis Æneis.** With Notes, Critical and Explanatory, by H. YOUNG. New Edition, revised and improved. With copious Additional Notes by Rev. T. H. L. LEARY, D.C.L., formerly Scholar of Brasenose College, Oxford. 3s.
- 5* ——— Part 1. Books i.—vi., 1s. 6d.
- 5** ——— Part 2. Books vii.—xii., 2s.
6. **Horace; Odes, Epode, and Carmen Sæculare.** Notes by H. YOUNG. 1s. 6d.
7. **Horace; Satires, Epistles, and Ars Poetica.** Notes by W. BROWNRIGG SMITH, M.A., F.R.G.S. 1s. 6d.
8. **Sallustii Crispi Catalina et Bellum Jugurthinum.** Notes, Critical and Explanatory, by W. M. DONNE, B.A., Trin. Coll., Cam. 1s. 6d.
9. **Terentii Andria et Heautontimorumenos.** With Notes, Critical and Explanatory, by the Rev. JAMES DAVIES, M.A. 1s. 6d.
10. **Terentii Adelphi, Hecyra, Phormio.** Edited, with Notes, Critical and Explanatory, by the Rev. JAMES DAVIES, M.A. 2s.
11. **Terentii Eunuchus, Comœdia.** Notes, by Rev. J. DAVIES, M.A. 1s. 6d.
12. **Ciceronis Oratio pro Sexto Roscio Amerino.** Edited, with an Introduction, Analysis, and Notes, Explanatory and Critical, by the Rev. JAMES DAVIES, M.A. 1s.
13. **Ciceronis Orationes in Catilinam, Verrem, et pro Archia.** With Introduction, Analysis, and Notes, Explanatory and Critical, by Rev. T. H. L. LEARY, D.C.L. formerly Scholar of Brasenose College, Oxford. 1s. 6d.
14. **Ciceronis Cato Major, Lælius, Brutus, sive de Senectute, de Amicitia, de Claris Oratoribus Dialogi.** With Notes by W. BROWNRIGG SMITH, M.A., F.R.G.S. 2s.
16. **Livy: History of Rome.** Notes by H. YOUNG and W. B. SMITH, M.A. Part 1. Books i., ii., 1s. 6d.
- 16* ——— Part 2. Books iii., iv., v., 1s. 6d.
17. ——— Part 3. Books xxi., xxii., 1s. 6d.
19. **Latin Verse Selections,** from Catullus, Tibullus, Propertius, and Ovid. Notes by W. B. DONNE, M.A., Trinity College, Cambridge. 2s.
20. **Latin Prose Selections,** from Varro, Columella, Vitruvius, Seneca, Quintilian, Florus, Velleius Paterculus, Valerius Maximus Suetonius, Apuleius, &c. Notes by W. B. DONNE, M.A. 2s.
21. **Juvenalis Satiræ.** With Prolegomena and Notes by T. H. S. ESCOTT, B.A., Lecturer on Logic at King's College, London. 2s.

GREEK.

14. **Greek Grammar**, in accordance with the Principles and Philological Researches of the most eminent Scholars of our own day. By HANS CLAUDE HAMILTON. 1s. 6d.
- 15, 17. **Greek Lexicon**. Containing all the Words in General Use, with their Significations, Inflections, and Doubtful Quantities. By HENRY R. HAMILTON. Vol. 1. Greek-English, 2s. 6d.; Vol. 2. English-Greek, 2s. On the Two Vols. in One, 4s. 6d.: cloth boards, 5s.
- 14, 15. **Greek Lexicon** (as above). Complete, with the GRAMMAR, in 17. One Vol., cloth boards, 6s.

GREEK CLASSICS. With Explanatory Notes in English.

1. **Greek Delectus**. Containing Extracts from Classical Authors, with Genealogical Vocabularies and Explanatory Notes, by H. YOUNG. New Edition, with an improved and enlarged Supplementary Vocabulary, by JOHN HUTCHISON, M.A., of the High School, Glasgow. 1s. 6d.
- 2, 3. **Xenophon's Anabasis; or, The Retreat of the Ten Thousand**. Notes and a Geographical Register, by H. YOUNG. Part 1. Books i. to iii., 1s. Part 2. Books iv. to vii., 1s.
4. **Lucian's Select Dialogues**. The Text carefully revised, with Grammatical and Explanatory Notes, by H. YOUNG. 1s. 6d.
- 5-12. **Homer, The Works of**. According to the Text of BAUMLEIN. With Notes, Critical and Explanatory, drawn from the best and latest Authorities, with Preliminary Observations and Appendices, by T. H. L. LEARY, M.A., D.C.L.
- | | | |
|--------------|-------------------------------------|---|
| THE ILIAD: | Part 1. Books i. to vi., 1s. 6d. | Part 3. Books xiii. to xviii., 1s. 6d. |
| | Part 2. Books vii. to xii., 1s. 6d. | Part 4. Books xix. to xxiv., 1s. 6d. |
| THE ODYSSEY. | Part 1. Books i. to vi., 1s. 6d. | Part 3. Books xiii. to xviii., 1s. 6d. |
| | Part 2. Books vii. to xii., 1s. 6d. | Part 4. Books xix. to xxiv., and Hymns, 2s. |
13. **Plato's Dialogues: The Apology of Socrates, the Crito, and the Phædo**. From the Text of C. F. HERMANN. Edited with Notes, Critical and Explanatory, by the Rev. JAMES DAVIES, M.A. 2s.
- 14-17. **Herodotus, The History of**, chiefly after the Text of GAISFORD. With Preliminary Observations and Appendices, and Notes, Critical and Explanatory, by T. H. L. LEARY, M.A., D.C.L.
- | |
|---|
| Part 1. Books i., ii. (The Clio and Euterpe), 2s. |
| Part 2. Books iii., iv. (The Thalia and Melpomene), 2s. |
| Part 3. Books v.-vii. (The Terpsichore, Erato, and Polymnia), 2s. |
| Part 4. Books viii., ix. (The Urania and Calliope) and Index, 1s. 6d. |
18. **Sophocles: Œdipus Tyrannus**. Notes by H. YOUNG. 1s.
20. **Sophocles: Antigone**. From the Text of DINDORF. Notes, Critical and Explanatory, by the Rev. JOHN MILNER, B.A. 2s.
23. **Euripides: Hecuba and Medea**. Chiefly from the Text of DINDORF. With Notes, Critical and Explanatory, by W. BROWNRIGG SMITH, M.A., F.R.G.S. 1s. 6d.
26. **Euripides: Alcestis**. Chiefly from the Text of DINDORF. With Notes, Critical and Explanatory, by JOHN MILNER, B.A. 1s. 6d.
30. **Æschylus: Prometheus Vincetus: The Prometheus Bound**. From the Text of DINDORF. Edited, with English Notes, Critical and Explanatory, by the Rev. JAMES DAVIES, M.A. 1s.
32. **Æschylus: Septem Contra Thebes: The Seven against Thebes**. From the Text of DINDORF. Edited, with English Notes, Critical and Explanatory, by the Rev. JAMES DAVIES, M.A. 1s.
40. **Aristophanes: Acharnians**. Chiefly from the Text of C. H. WEISE. With Notes, by C. S. T. TOWNSHEND, M.A. 1s. 6d.
41. **Thucydides: History of the Peloponnesian War**. Notes by H. YOUNG. Book 1. 1s.
42. **Xenophon's Panegyric on Agesilaus**. Notes and Introduction by L. F. W. JEWITT. 1s. 6d.
43. **Demosthenes. The Oration on the Crown and the Philippics**. With English Notes. By Rev. T. H. L. LEARY, D.C.L., formerly Scholar of Brasenose College, Oxford. 1s. 6d.

LONDON, December, 1881.

A Catalogue of Books

INCLUDING MANY NEW AND STANDARD WORKS, IN

ENGINEERING, ARCHITECTURE, AGRICULTURE,
MATHEMATICS, MECHANICS, SCIENCE, ETC.

PUBLISHED BY

CROSBY LOCKWOOD & CO.,

7, STATIONERS'-HALL COURT, LUDGATE HILL, E.C.

ENGINEERING, SURVEYING, ETC.

Humber's New Work on Water-Supply.

A COMPREHENSIVE TREATISE on the WATER-SUPPLY of CITIES and TOWNS. By WILLIAM HUMBER, A-M. Inst. C.E., and M. Inst. M.E. Illustrated with 50 Double Plates, 1 Single Plate, Coloured Frontispiece, and upwards of 250 Woodcuts, and containing 400 pages of Text, Imp. 4to, 6l. 6s. elegantly and substantially half-bound in morocco.

List of Contents:—

I. Historical Sketch of some of the means that have been adopted for the Supply of Water to Cities and Towns.—II. Water and the Foreign Matter usually associated with it.—III. Rainfall and Evaporation.—IV. Springs and the water-bearing formations of various districts.—V. Measurement and Estimation of the Flow of Water.—VI. On the Selection of the Source of Supply.—VII. Wells.—VIII. Reservoirs.—IX. The Purification of Water.—X. Pumps.—XI. Pumping

Machinery.—XII. Conduits.—XIII. Distribution of Water.—XIV. Meters, Service Pipes, and House Fittings.—XV. The Law and Economy of Water Works.—XVI. Constant and Intermittent Supply.—XVII. Description of Plates.—Appendices, giving Tables of Rates of Supply, Velocities, &c. &c., together with Specifications of several Works illustrated, among which will be found:—Aberdeen, Bideford, Canterbury, Dundee, Halifax, Lambeth, Rotherham, Dublin, and others.

"The most systematic and valuable work upon water supply hitherto produced in English, or in any other language . . . Mr. Humber's work is characterised almost throughout by an exhaustiveness much more distinctive of French and German than of English technical treatises."—*Engineer*.

Humber's Great Work on Bridge Construction.

A COMPLETE and PRACTICAL TREATISE on CAST and WROUGHT-IRON BRIDGE CONSTRUCTION, including Iron Foundations. In Three Parts—Theoretical, Practical, and Descriptive. By WILLIAM HUMBER, A-M. Inst. C.E., and M. Inst. M.E. Third Edition, with 115 Double Plates. In 2 vols. imp. 4to, 6l. 16s. 6d. half-bound in morocco.

"A book—and particularly a large and costly treatise like Mr. Humber's—which has reached its third edition may certainly be said to have established its own reputation."—*Engineering*.

Humber's Modern Engineering.

A RECORD of the PROGRESS of MODERN ENGINEERING. First Series. Comprising Civil, Mechanical, Marine, Hydraulic, Railway, Bridge, and other Engineering Works, &c. By WILLIAM HUMBER, A.M. Inst. C.E., &c. Imp. 4to, with 36 Double Plates, drawn to a large scale, and Portrait of John Hawkshaw C.E., F.R.S., &c., and descriptive Letter-press, Specifications, &c. 3l. 3s. half morocco.

List of the Plates and Diagrams.

Victoria Station and Roof, L. B. & S. C. R. (8 plates); Southport Pier (2 plates); Victoria Station and Roof, L. C. & D. and G. W. R. (6 plates); Roof of Cremorne Music Hall; Bridge over G. N. Railway; Roof of Station, Dutch Rhenish Rail (2	plates); Bridge over the Thames, West London Extension Railway (5 plates); Armour Plates; Suspension Bridge, Thames (4 plates); The Allen Engine; Suspension Bridge, Avon (3 plates); Underground Railway (3 plates).
--	---

"Handsomely lithographed and printed. It will find favour with many who desire to preserve in a permanent form copies of the plans and specifications prepared for the guidance of the contractors for many important engineering works."—*Engineer*.

HUMBER'S RECORD OF MODERN ENGINEERING. Second Series. Imp. 4to, with 36 Double Plates, Portrait of Robert Stephenson, C.E., &c., and descriptive Letterpress, Specifications, &c. 3l. 3s. half morocco.

List of the Plates and Diagrams.

Birkenhead Docks, Low Water Basin (15 plates); Charing Cross Station Roof, C. C. Railway (3 plates); Digswell Viaduct, G. N. Railway; Robbery Wood Viaduct, G. N. Railway; Iron Permanent Way; Clydach Viaduct, Merthyr, Tredegar, and Abergavenny Railway; Ebbw	Viaduct, Merthyr, Tredegar, and Abergavenny Railway; College Wood Viaduct, Cornwall Railway; Dublin Winter Palace Roof (3 plates); Bridge over the Thames, L. C. and D. Railway (6 plates); Albert Harbour, Greenock (4 plates).
--	--

HUMBER'S RECORD OF MODERN ENGINEERING. Third Series. Imp. 4to, with 40 Double Plates, Portrait of J. R. M'Clean, Esq., late Pres. Inst. C.E., and descriptive Letterpress, Specifications, &c. 3l. 3s. half morocco.

List of the Plates and Diagrams.

MAIN DRAINAGE, METROPOLIS.— <i>North Side.</i> —Map showing Interception of Sewers; Middle Level Sewer (2 plates); Outfall Sewer, Bridge over River Lea (3 plates); Outfall Sewer, Bridge over Marsh Lane, North Woolwich Railway, and Bow and Barking Railway Junction; Outfall Sewer, Bridge over Bow and Barking Railway (3 plates); Outfall Sewer, Bridge over East London Waterworks' Feeder (2 plates); Outfall Sewer, Reservoir (2 plates); Outfall Sewer, Tumbling Bay and Outlet; Outfall Sewer, Penstocks.	Branch (2 plates); Outfall Sewer, Reservoir and Outlet (4 plates); Outfall Sewer, Filth Hoist; Sections of Sewers (North and South Sides).
---	--

<i>South Side.</i> —Outfall Sewer, Bermondsey	THAMES EMBANKMENT.—Section of River Wall; Steamboat Pier, Westminster (2 plates); Landing Stairs between Charing Cross and Waterloo Bridges; York Gate (2 plates); Overflow and Outlet at Savoy Street Sewer (3 plates); Steamboat Pier, Waterloo Bridge (3 plates); Junction of Sewers, Plans and Sections; Gullies, Plans and Sections; Rolling Stock; Granite and Iron Forts.
---	--

HUMBER'S RECORD OF MODERN ENGINEERING. Fourth Series. Imp. 4to, with 36 Double Plates, Portrait of John Fowler, Esq., late Pres. Inst. C.E., and descriptive Letterpress, Specifications, &c. 3l. 3s. half morocco.

List of the Plates and Diagrams.

Abbey Mills Pumping Station, Main Drainage, Metropolis (4 plates); Barrow Docks (5 plates); Manquis Viaduct, Santiago and Valparaiso Railway (2 plates); Adam's Locomotive, St. Helen's Canal Railway (2 plates); Cannon Street Station Roof, Charing Cross Railway (3 plates); Road Bridge over the River Moka (2 plates). Telegraphic Apparatus for Meso-	potamia; Viaduct over the River Wye, Midland Railway (3 plates); St. German's Viaduct, Cornwall Railway (2 plates); Wrought-Iron Cylinder for Diving Bell; Millwall Docks (6 plates); Milroy's Patent Excavator, Metropolitan District Railway (6 plates); Harbours, Ports, and Breakwaters (3 plates).
---	---

Strains, Formulæ & Diagrams for Calculation of.

A HANDY BOOK for the CALCULATION of STRAINS in GIRDERS and SIMILAR STRUCTURES, and their STRENGTH ; consisting of Formulæ and Corresponding Diagrams, with numerous Details for Practical Application, &c. By WILLIAM HUMBER, A-M. Inst. C.E., &c. Third Edition. With nearly 100 Woodcuts and 3 Plates, Crown 8vo, 7s. 6d. cloth.

"The arrangement of the matter in this little volume is as convenient as it well could be. . . . The system of employing diagrams as a substitute for complex computations is one justly coming into great favour, and in that respect Mr. Humber's volume is fully up to the times."—*Engineering*.

"The formulæ are neatly expressed, and the diagrams good."—*Athenæum*.

Strains.

THE STRAINS ON STRUCTURES OF IRONWORK ; with Practical Remarks on Iron Construction. By F. W. SHEILDS, M. Inst. C.E. Second Edition, with 5 Plates. Royal 8vo, 5s. cloth.

"The student cannot find a better little book on this subject than that written by Mr. Shields."—*Engineer*.

Barlow on the Strength of Materials, enlarged.

A TREATISE ON THE STRENGTH OF MATERIALS, with Rules for application in Architecture, the Construction of Suspension Bridges, Railways, &c. ; and an Appendix on the Power of Locomotive Engines, and the effect of Inclined Planes and Gradients. By PETER BARLOW, F.R.S. A New Edition, revised by his Sons, P. W. BARLOW, F.R.S., and W. H. BARLOW, F.R.S. The whole arranged and edited by W. HUMBER, A-M. Inst. C.E. 8vo, 400 pp., with 19 large Plates, 18s. cloth.

"The best book on the subject which has yet appeared. . . . We know of no work that so completely fulfils its mission."—*English Mechanic*.

"The standard treatise upon this particular subject."—*Engineer*.

Strength of Cast Iron, &c.

A PRACTICAL ESSAY on the STRENGTH of CAST IRON and OTHER METALS. By THOMAS TREDGOLD, C.E. Fifth Edition. To which are added, Experimental Researches on the Strength and other Properties of Cast Iron, by E. HODGKINSON, F.R.S. With 9 Engravings and numerous Woodcuts. 8vo, 12s. cloth. * * HODGKINSON'S RESEARCHES, separate, price 6s.

Hydraulics.

HYDRAULIC TABLES, CO-EFFICIENTS, and FORMULÆ for finding the Discharge of Water from Orifices, Notches, Weirs, Pipes, and Rivers. With New Formulæ, Tables, and General Information on Rain-fall, Catchment-Basins, Drainage, Sewerage, Water Supply for Towns and Mill Power. By JOHN NEVILLE, Civil Engineer, M.R.I.A. Third Edition, carefully revised, with considerable Additions. Numerous Illustrations. Cr. 8vo, 14s. cloth.

"Undoubtedly an exceedingly useful and elaborate compilation."—*Iron*.

"Alike valuable to students and engineers in practice."—*Mining Journal*.

River Engineering.

RIVER BARS : Notes on the Causes of their Formation, and on their Treatment by 'Induced Tidal Scour,' with a Description of the Successful Reduction by this Method of the Bar at Dublin. By I. J. MANN, Assistant Engineer to the Dublin Port and Docks Board. With Illustrations. Royal 8vo. 7s. 6d. cloth. [Just published.

Levelling.

A TREATISE on the PRINCIPLES and PRACTICE of LEVELLING ; showing its Application to Purposes of Railway and Civil Engineering, in the Construction of Roads ; with Mr. TELFORD'S Rules for the same. By FREDERICK W. SIMMS, F.G.S., M. Inst. C.E. Sixth Edition, very carefully revised, with the addition of Mr. LAW'S Practical Examples for Setting out Railway Curves, and Mr. TRAUTWINE'S Field Practice of Laying out Circular Curves. With 7 Plates and numerous Woodcuts. 8vo, 8s. 6d. cloth.

* * TRAUTWINE on Curves, separate, 5s.

"The text-book on levelling in most of our engineering schools and colleges."—*Engineer.*

Practical Tunnelling.

PRACTICAL TUNNELLING : Explaining in detail the Setting out of the Works, Shaft-sinking and Heading-Driving, Ranging the Lines and Levelling under Ground, Sub-Excavating, Timbering, and the Construction of the Brickwork of Tunnels with the amount of labour required for, and the Cost of, the various portions of the work. By F. W. SIMMS, M. Inst. C.E. Third Edition, Revised and Extended. By D. KINNEAR CLARK, M.I.C.E. Imp. 8vo, with 21 Folding Plates and numerous Wood Engravings, 30s. cloth.

"It has been regarded from the first as a text-book of the subject. . . . Mr. Clark has added immensely to the value of the book."—*Engineer.*

Steam.

STEAM AND THE STEAM ENGINE, Stationary and Portable. Being an Extension of Sewell's Treatise on Steam. By D. KINNEAR CLARK, M.I.C.E. Second Edition. 12mo, 4s. cloth.

Civil and Hydraulic Engineering.

CIVIL ENGINEERING. By HENRY LAW, M. Inst. C.E. Including a Treatise on Hydraulic Engineering, by GEORGE R. BURNELL, M.I.C.E. Sixth Edition, Revised, with large additions on Recent Practice in Civil Engineering, by D. KINNEAR CLARK, M. Inst. C.E. 12mo, 7s. 6d., cloth.

[Just published.]

Gas-Lighting.

COMMON SENSE FOR GAS-USERS : a Catechism of Gas-Lighting for Householders, Gasfitters, Millowners, Architects, Engineers, &c. By R. WILSON, C.E. 2nd Edition. Cr. 8vo, 2s. 6d.

Bridge Construction in Masonry, Timber, & Iron.

EXAMPLES OF BRIDGE AND VIADUCT CONSTRUCTION OF MASONRY, TIMBER, AND IRON ; consisting of 46 Plates from the Contract Drawings or Admeasurement of select Works. By W. DAVIS HASKOLL, C.E. Second Edition, with the addition of 554 Estimates, and the Practice of Setting out Works, with 6 pages of Diagrams. Imp. 4to, 2l. 12s. 6d. half-morocco.

"A work of the present nature by a man of Mr. Haskoll's experience, must prove invaluable. The tables of estimates considerably enhance its value."—*Engineering.*

Earthwork.

EARTHWORK TABLES, showing the Contents in Cubic Yards of Embankments, Cuttings, &c., of Heights or Depths up to an average of 80 feet. By JOSEPH BROADBENT, C.E., and FRANCIS CAMPIN, C.E. Cr. 8vo, oblong, 5s. cloth.

Tramways and their Working.

TRAMWAYS: their CONSTRUCTION and WORKING. With Special Reference to the Tramways of the United Kingdom. By D. KINNEAR CLARK, M. Inst. C. E., Author of 'Railway Machinery,' &c., 2vols. 8vo, with Wood Engravings and thirteen folding Plates, 30s. cloth.

* * The Second or Supplementary Volume, recording analytically the Progress recently made in the Design and Construction of Tramways, and in the Means of Locomotion by Mechanical Power, may be had separately. With Wood Engravings. Large Crown 8vo, 12s. cloth. [Just published.]

"All interested in tramways must refer to it, as all railway engineers have turned to the author's work 'Railway Machinery.'"—*The Engineer*.

Pioneer Engineering.

PIONEER ENGINEERING. A Treatise on the Engineering Operations connected with the Settlement of Waste Lands in New Countries. By EDWARD DOBSON, A.I.C.E. With Plates and Wood Engravings. Revised Edition. 12mo, 5s. cloth.

"A workmanlike production, and one without possession of which no man should start to encounter the duties of a pioneer engineer."—*Athenæum*.

Steam Engine.

TEXT-BOOK ON THE STEAM ENGINE. By T. M. GOODEVE, M.A., Barrister-at-Law, Author of "The Principles of Mechanics," "The Elements of Mechanism," &c. Third Edition. With numerous Illustrations. Crown 8vo, 6s. cloth.

"Mr. Goodeve's text-book is a work of which every young engineer should possess himself."—*Mining Journal*.

Steam.

THE SAFE USE OF STEAM: containing Rules for Unprofessional Steam Users. By an ENGINEER. 4th Edition. Sewed, 6d.

"If steam-users would but learn this little book by heart, boiler explosions would become sensations by their rarity."—*English Mechanic*.

Mechanical Engineering.

MECHANICAL ENGINEERING: Comprising Metallurgy, Moulding, Casting, Forging, Tools, Workshop Machinery, Mechanical Manipulation, Manufacture of the Steam Engine, &c. By FRANCIS CAMPIN, C.E. 12mo, 3s. cloth boards.

Works of Construction.

MATERIALS AND CONSTRUCTION: a Theoretical and Practical Treatise on the Strains, Designing, and Erection of Works of Construction. By F. CAMPIN, C.E. 12mo. 3s. 6d. cl. brds.

Iron Bridges, Girders, Roofs, &c.

A TREATISE ON THE APPLICATION OF IRON TO THE CONSTRUCTION OF BRIDGES, GIRDERS, ROOFS, AND OTHER WORKS. By F. CAMPIN, C.E. 12mo, 3s.

Boiler Construction.

THE MECHANICAL ENGINEER'S OFFICE BOOK: Boiler Construction. By NELSON FOLEY, Cardiff, late Assistant Manager Palmer's Engine Works, Jarrow. With 29 full-page Lithographic Diagrams. Folio 21s. half-bound. [Just published.]

Oblique Arches.

A PRACTICAL TREATISE ON THE CONSTRUCTION OF OBLIQUE ARCHES. By JOHN HART. 3rd Ed. Imp. 8vo, 8s. cloth.

Oblique Bridges.

A PRACTICAL and THEORETICAL ESSAY on OBLIQUE BRIDGES, with 13 large Plates. By the late GEO. WATSON BUCK, M.I.C.E. Third Edition, revised by his Son, J. H. WATSON BUCK, M.I.C.E.; and with the addition of Description to Diagrams for Facilitating the Construction of Oblique Bridges, by W. H. BARLOW, M.I.C.E. Royal 8vo, 12s. cloth.

"The standard text book for all engineers regarding skew arches is Mr. Buck's treatise and it would be impossible to consult a better."—*Engineer*.

Gas and Gasworks.

THE CONSTRUCTION OF GASWORKS AND THE MANUFACTURE AND DISTRIBUTION OF COAL-GAS. Originally written by SAMUEL HUGHES, C.E. Sixth Edition. Re-written and much Enlarged, by WILLIAM RICHARDS, C.E. With 72 Woodcuts. 12mo, 5s. cloth boards.

Waterworks for Cities and Towns.

WATERWORKS for the SUPPLY of CITIES and TOWNS, with a Description of the Principal Geological Formations of England as influencing Supplies of Water. By S. HUGHES. 4s. 6d. cloth.

Locomotive-Engine Driving.

LOCOMOTIVE-ENGINE DRIVING; a Practical Manual for Engineers in charge of Locomotive Engines. By MICHAEL REYNOLDS, M.S.E., formerly Locomotive Inspector L. B. and S. C. R. Fourth Edition, greatly enlarged. Comprising A KEY TO THE LOCOMOTIVE ENGINE. With Illustrations and Portrait of Author. Crown 8vo, 4s. 6d. cloth.

"Mr. Reynolds has supplied a want, and has supplied it well. We can confidently recommend the book not only to the practical driver, but to every one who takes an interest in the performance of locomotive engines."—*Engineer*.

The Engineer, Fireman, and Engine-Boy.

THE MODEL LOCOMOTIVE ENGINEER, FIREMAN, AND ENGINE-BOY: comprising a Historical Notice of the Pioneer Locomotive Engines and their Inventors, with a project for the establishment of Certificates of Qualification in the Running Service of Railways. By MICHAEL REYNOLDS, Author of "Locomotive-Engine Driving." Crown 8vo, 4s. 6d. cloth.

"From the technical knowledge of the author it will appeal to the railway man of to-day more forcibly than anything written by Dr. Smiles."—*English Mechanic*.

Stationary Engine Driving.

STATIONARY ENGINE DRIVING. A Practical Manual for Engineers in Charge of Stationary Engines. By MICHAEL REYNOLDS ("The Engine-Driver's Friend"), Author of "Locomotive-Engine Driving," &c. With Plates and Woodcuts, and Steel Portrait of James Watt. Crown 8vo, 4s. 6d. cloth.

Engine-Driving Life.

ENGINE-DRIVING LIFE; or Stirring Adventures and Incidents in the Lives of Locomotive Engine-Drivers. By MICHAEL REYNOLDS. Crown 8vo, 2s. cloth. [Just published.]

Construction of Iron Beams, Pillars, &c.

IRON AND HEAT ; exhibiting the Principles concerned in the construction of Iron Beams, Pillars, and Bridge Girders, and the Action of Heat in the Smelting Furnace. By J. ARMOUR, C.E. 3s.

Fire Engineering.

FIRES, FIRE-ENGINES, AND FIRE BRIGADES. With a History of Fire-Engines, their Construction, Use, and Management ; Remarks on Fire-Proof Buildings, and the Preservation of Life from Fire ; Statistics of the Fire Appliances in English Towns ; Foreign Fire Systems ; Hints on Fire Brigades, &c., &c. By CHARLES F. T. YOUNG, C.E. With numerous Illustrations, handsomely printed, 544 pp., demy 8vo, 1l. 4s. cloth.

"We can most heartily commend this book."—*Engineering.*

"Mr. Young's book on 'Fire Engines and Fire Brigades' contains a mass of information, which has been collected from a variety of sources. The subject is so intensely interesting and useful that it demands consideration."—*Building News.*

Trigonometrical Surveying.

AN OUTLINE OF THE METHOD OF CONDUCTING A TRIGONOMETRICAL SURVEY, for the Formation of Geographical and Topographical Maps and Plans, Military Reconnaissance, Levelling, &c., with the most useful Problems in Geodesy and Practical Astronomy. By LIEUT.-GEN. FROME, R.E., late Inspector-General of Fortifications. Fourth Edition, Enlarged, and partly Re-written. By CAPTAIN CHARLES WARREN, R.E. With 19 Plates and 115 Woodcuts, royal 8vo, 16s. cloth.

Tables of Curves.

TABLES OF TANGENTIAL ANGLES and MULTIPLES for setting out Curves from 5 to 200 Radius. By ALEXANDER BEAZELEY, M. Inst. C.E. Second Edition. Printed on 48 Cards, and sold in a cloth box, waistcoat-pocket size, 3s. 6d.

"Each table is printed on a small card, which, being placed on the theodolite, leaves the hands free to manipulate the instrument"—*Engineer.*

"Very handy ; a man may know that all his day's work must fall on two of these cards, which he puts into his own card-case, and leaves the rest behind."—

Engineering Fieldwork.

[*Athenæum.*]

THE PRACTICE OF ENGINEERING FIELDWORK, applied to Land and Hydraulic, Hydrographic, and Submarine Surveying and Levelling. Second Edition, revised, with considerable additions, and a Supplement on WATERWORKS, SEWERS, SEWAGE, and IRRIGATION. By W. DAVIS HASKOLL, C.E. Numerous folding Plates. In 1 Vol., demy 8vo, 1l. 5s., cl. boards.

Large Tunnel Shafts.

THE CONSTRUCTION OF LARGE TUNNEL SHAFTS. A Practical and Theoretical Essay. By J. H. WATSON BUCK, M. Inst. C.E., Resident Engineer, London and North-Western Railway. Illustrated with Folding Plates. Royal 8vo, 12s. cloth.

"Many of the methods given are of extreme practical value to the mason, and the observations on the form of arch, the rules for ordering the stone, and the construction of the templates, will be found of considerable use. We commend the book to the engineering profession, and to all who have to build similar shafts."—*Building News.*

"Will be regarded by civil engineers as of the utmost value, and calculated to save much time and obviate many mistakes."—*Colliery Guardian.*

Survey Practice.

AID TO SURVEY PRACTICE: for Reference in Surveying, Levelling, Setting-out and in Route Surveys of Travellers by Land and Sea. With Tables, Illustrations, and Records. By LOWIS D'A. JACKSON, A-M.I.C.E. Author of "Hydraulic Manual and Statistics," &c. Large crown, 8vo, 12s. 6d., cloth.

"Mr. Jackson has produced a valuable *vade-mecum* for the surveyor. We can recommend this book as containing an admirable supplement to the teaching of the accomplished surveyor."—*Athenæum*.

"A general text book was wanted, and we are able to speak with confidence of Mr. Jackson's treatise. . . . We cannot recommend to the student who knows something of the mathematical principles of the subject a better course than to fortify his practice in the field under a competent surveyor with a study of Mr. Jackson's useful manual. The field records illustrate every kind of survey, and will be found an essential aid to the student."—*Building News*.

"The author brings to his work a fortunate union of theory and practical experience which, aided by a clear and lucid style of writing, renders the book both a very useful one and very agreeable to read."—*Builder*.

Sanitary Work.

SANITARY WORK IN THE SMALLER TOWNS AND IN VILLAGES. Comprising:—1. Some of the more Common Forms of Nuisance and their Remedies; 2. Drainage; 3. Water Supply. By CHAS. SLAGG, Assoc. Inst. C.E. Crown 8vo, 3s. cloth.

"A very useful book, and may be safely recommended. The author has had practical experience in the works of which he treats."—*Builder*.

Locomotives.

LOCOMOTIVE ENGINES, A Rudimentary Treatise on. Comprising an Historical Sketch and Description of the Locomotive Engine. By G. D. DEMPSEY, C.E. With large additions treating of the MODERN LOCOMOTIVE, by D. KINNEAR CLARK, C.E., M.I.C.E., Author of "Tramways, their Construction and Working," &c., &c. With numerous Illustrations. 12mo. 3s. 6d. cloth boards.

"The student cannot fail to profit largely by adopting this as his preliminary textbook."—*Iron and Coal Trades Review*.

"Seems a model of what an elementary technical book should be."—*Academy*.

Fuels and their Economy.

FUEL, its Combustion and Economy; consisting of an Abridgment of "A Treatise on the Combustion of Coal and the Prevention of Smoke." By C. W. WILLIAMS, A.I.C.E. With extensive additions on Recent Practice in the Combustion and Economy of Fuel—Coal, Coke, Wood, Peat, Petroleum, &c.; by D. KINNEAR CLARK, C.E., M.I.C.E. Second Edition, revised. With numerous Illustrations. 12mo. 4s. cloth boards.

"Students should buy the book and read it, as one of the most complete and satisfactory treatises on the combustion and economy of fuel to be had."—*Engineer*.

Roads and Streets.

THE CONSTRUCTION OF ROADS AND STREETS. In Two Parts. I. The Art of Constructing Common Roads. By HENRY LAW, C.E. Revised and Condensed. II. Recent Practice in the Construction of Roads and Streets: including Pavements of Stone, Wood, and Asphalte. By D. KINNEAR CLARK, C.E., M.I.C.E. Second Edit., revised. 12mo, 5s. cloth.

"A book which every borough surveyor and engineer must possess, and which will be of considerable service to architects, builders, and property owners generally."—*Building News*.

Sewing Machine (The).

SEWING MACHINERY; being a Practical Manual of the Sewing Machine, comprising its History and Details of its Construction, with full Technical Directions for the Adjusting of Sewing Machines. By J. W. URQUHART, Author of "Electro Plating: a Practical Manual;" "Electric Light: its Production and Use." With Numerous Illustrations. 12mo, 2s. 6d. cloth boards.

Field-Book for Engineers.

THE ENGINEER'S, MINING SURVEYOR'S, and CONTRACTOR'S FIELD-BOOK. By W. DAVIS HASKOLL, C.E. Consisting of a Series of Tables, with Rules, Explanations of Systems, and Use of Theodolite for Traverse Surveying and Plotting the Work with minute accuracy by means of Straight Edge and Set Square only; Levelling with the Theodolite, Casting out and Reducing Levels to Datum, and Plotting Sections in the ordinary manner; Setting out Curves with the Theodolite by Tangential Angles and Multiples with Right and Left-hand Readings of the Instrument; Setting out Curves without Theodolite on the System of Tangential Angles by Sets of Tangents and Offsets; and Earthwork Tables to 80 feet deep, calculated for every 6 inches in depth. With numerous Woodcuts. 4th Edition, enlarged. Cr. 8vo. 12s. cloth.

"The book is very handy, and the author might have added that the separate tables of sines and tangents to every minute will make it useful for many other purposes, the genuine traverse tables existing all the same."—*Athenæum*.

"Cannot fail, from its portability and utility, to be extensively patronised by the engineering profession."—*Mining Journal*.

Earthwork, Measurement and Calculation of.

A MANUAL on EARTHWORK. By ALEX. J. S. GRAHAM, C.E., Resident Engineer, Forest of Dean Central Railway. With numerous Diagrams. 18mo, 2s. 6d. cloth.

"As a really handy book for reference, we know of no work equal to it; and the railway engineers and others employed in the measurement and calculation of earthwork will find a great amount of practical information very admirably arranged, and available for general or rough estimates, as well as for the more exact calculations required in the engineers' contractor's offices."—*Artizan*.

Drawing for Engineers, &c.

THE WORKMAN'S MANUAL OF ENGINEERING DRAWING. By JOHN MAXTON, Instructor in Engineering Drawing, Royal Naval College, Greenwich, formerly of R. S. N. A., South Kensington. Fourth Edition, carefully revised. With upwards of 300 Plates and Diagrams. 12mo, cloth, strongly bound, 4s.

"A copy of it should be kept for reference in every drawing office."—*Engineering*.

"Indispensable for teachers of engineering drawing."—*Mechanics' Magazine*.

Weale's Dictionary of Terms.

A DICTIONARY of TERMS used in ARCHITECTURE, BUILDING, ENGINEERING, MINING, METALLURGY, ARCHÆOLOGY, the FINE ARTS, &c. By JOHN WEALE. Fifth Edition, revised by ROBERT HUNT, F.R.S., Keeper of Mining Records, Editor of "Ure's Dictionary of Arts." 12mo, 6s. cl. bds.

"The best small technological dictionary in the language."—*Architect*.

"The absolute accuracy of a work of this character can only be judged of after extensive consultation, and from our examination it appears very correct and very complete."—*Mining Journal*.

MINING, METALLURGY, ETC.

Metalliferous Minerals and Mining.

A TREATISE ON METALLIFEROUS MINERALS AND MINING. By D.C. DAVIES, F.G.S., author of "A Treatise on Slate and Slate Quarrying." With numerous wood engravings. Second Edition, revised. Cr. 8vo. 12s. 6d. cloth.

"Without question, the most exhaustive and the most practically useful work we have seen; the amount of information given is enormous, and it is given concisely and intelligibly."—*Mining Journal*.

"The volume is one which no student of mineralogy should be without."—*Colliery Guardian*.

"The author has gathered together from all available sources a vast amount of really useful information. As a history of the present state of mining throughout the world this book has a real value, and it supplies an actual want, for no such information has hitherto been brought together within such limited space."—*Athenæum*.

Slate and Slate Quarrying.

A TREATISE ON SLATE AND SLATE QUARRYING, Scientific, Practical, and Commercial. By D. C. DAVIES, F.G.S., Mining Engineer, &c. With numerous Illustrations and Folding Plates. Second Edition, carefully revised. 12mo, 3s. 6d. cloth boards.

"Mr. Davies has written a useful and practical hand-book on an important industry, with all the conditions and details of which he appears familiar."—*Engineering*.

"The work is illustrated by actual practice, and is unusually thorough and lucid. . . . Mr. Davies has completed his work with industry and skill."—*Builder*.

Metallurgy of Iron.

A TREATISE ON THE METALLURGY OF IRON: containing Outlines of the History of Iron Manufacture, Methods of Assay, and Analyses of Iron Ores, Processes of Manufacture of Iron and Steel, &c. By H. BAUERMAN, F.G.S., Associate of the Royal School of Mines. With numerous Illustrations. Fourth Edition, revised and much enlarged. 12mo, cloth boards, 5s.

"Has the merit of brevity and conciseness, as to less important points, while all material matters are very fully and thoroughly entered into."—*Standard*.

Manual of Mining Tools.

MINING TOOLS. For the use of Mine Managers, Agents, Mining Students, &c. By WILLIAM MORGANS, Lecturer on Practical Mining at the Bristol School of Mines. Volume of Text. 12mo, 3s. With an Atlas of Plates, containing 235 Illustrations. 4to, 6s. Together, 9s. cloth boards.

"Students in the Science of Mining, and Overmen, Captains, Managers, and Viewers may gain practical knowledge and useful hints by the study of Mr. Morgans' Manual."—*Colliery Guardian*.

Mining, Surveying and Valuing.

THE MINERAL SURVEYOR AND VALUER'S COMPLETE GUIDE, comprising a Treatise on Improved Mining Surveying, with new Traverse Tables; and Descriptions of Improved Instruments; also an Exposition of the Correct Principles of Laying out and Valuing Home and Foreign Iron and Coal Mineral Properties. By WILLIAM LINTERN, Mining and Civil Engineer. With four Plates of Diagrams, Plans, &c., 12mo, 4s. cloth.

"Contains much valuable information given in a small compass, and which, as far as we have tested it, is thoroughly trustworthy."—*Iron and Coal Trades Review*.

* * The above, bound with THOMAN'S TABLES. (See page 20.) Price 7s. 6d. cloth.

Coal and Coal Mining.

COAL AND COAL MINING: a Rudimentary Treatise on. By WARINGTON W. SMYTH, M.A., F.R.S., &c., Chief Inspector of the Mines of the Crown. Fifth edition, revised and corrected. 12mo, with numerous Illustrations, 4s. cloth boards.

"Every portion of the volume appears to have been prepared with much care, and as an outline is given of every known coal-field in this and other countries, as well as of the two principal methods of working, the book will doubtless interest a very large number of readers."—*Mining Journal*.

Underground Pumping Machinery.

MINE DRAINAGE; being a Complete and Practical Treatise on Direct-Acting Underground Steam Pumping Machinery, with a Description of a large number of the best known Engines, their General Utility and the Special Sphere of their Action, the Mode of their Application, and their merits compared with other forms of Pumping Machinery. By STEPHEN MICHELL, Joint-Author of "The Cornish System of Mine Drainage." 8vo, 15s. cloth. [*Just published.*]

NAVAL ARCHITECTURE, NAVIGATION, ETC.

Pocket Book for Naval Architects & Shipbuilders.

THE NAVAL ARCHITECT'S AND SHIPBUILDER'S POCKET BOOK OF FORMULÆ, RULES, AND TABLES AND MARINE ENGINEER'S AND SURVEYOR'S HANDY BOOK OF REFERENCE. By CLEMENT MACKROW, M. Inst. N. A., Naval Draughtsman. Second Edition, revised. With numerous Diagrams. Fcap., 12s. 6d., strongly bound in leather.

"Should be used by all who are engaged in the construction or design of vessels."—*Engineer*.

"There is scarcely a subject on which a naval architect or shipbuilder can require to refresh his memory which will not be found within the covers of Mr. Mackrow's book."—*English Mechanic*.

"Mr. Mackrow has compressed an extraordinary amount of information into this useful volume."—*Athenæum*.

Grantham's Iron Ship-Building.

ON IRON SHIP-BUILDING; with Practical Examples and Details. Fifth Edition. Imp. 4to, boards, enlarged from 24 to 40 Plates (21 quite new), including the latest Examples. Together with separate Text, also considerably enlarged, 12mo, cloth limp. By JOHN GRANTHAM, M. Inst. C.E., &c. 2l. 2s. complete.

"Mr. Grantham's work is of great interest. It will, we are confident, command an extensive circulation among shipbuilders in general. By order of the Board of Admiralty, the work will form the text-book on which the examination in iron ship-building of candidates for promotion in the dockyards will be mainly based."—*Engineering*.

Pocket-Book for Marine Engineers.

A POCKET-BOOK OF USEFUL TABLES AND FORMULÆ FOR MARINE ENGINEERS. By FRANK PROCTOR, A.I.N.A. Second Edition, revised and enlarged. Royal 32mo, leather, gilt edges, with strap, 4s.

"A most useful companion to all marine engineers."—*United Service Gazette*.

"Scarcely anything required by a naval engineer appears to have been forgotten."—*Iron*.

Light-Houses.

EUROPEAN LIGHT-HOUSE SYSTEMS ; being a Report of a Tour of Inspection made in 1873. By Major GEORGE H. ELLIOT, Corps of Engineers, U.S.A. Illustrated by 51 Engravings and 31 Woodcuts in the Text. 8vo, 21s. cloth.

Surveying (Land and Marine).

LAND AND MARINE SURVEYING, in Reference to the Preparation of Plans for Roads and Railways, Canals, Rivers, Towns' Water Supplies, Docks and Harbours ; with Description and Use of Surveying Instruments. By W. DAVIS HASKOLL, C.E. With 14 folding Plates, and numerous Woodcuts. 8vo, 12s. 6d. cloth.

"A most useful and well arranged book for the aid of a student."—*Builder*.

"Of the utmost practical utility, and may be safely recommended to all students who aspire to become clean and expert surveyors."—*Mining Journal*.

Storms.

STORMS : their Nature, Classification, and Laws, with the Means of Predicting them by their Embodiments, the Clouds. By WILLIAM BLASIUS. Crown 8vo, 10s. 6d. cloth boards.

Rudimentary Navigation.

THE SAILOR'S SEA-BOOK : a Rudimentary Treatise on Navigation. By JAMES GREENWOOD, B.A. New and enlarged edition. By W. H. ROSSER. 12mo, 3s. cloth boards.

Mathematical and Nautical Tables.

MATHEMATICAL TABLES, for Trigonometrical, Astronomical, and Nautical Calculations ; to which is prefixed a Treatise on Logarithms. By HENRY LAW, C.E. Together with a Series of Tables for Navigation and Nautical Astronomy. By J. R. YOUNG, formerly Professor of Mathematics in Belfast College. New Edition. 12mo, 4s. cloth boards.

Navigation (Practical), with Tables.

PRACTICAL NAVIGATION : consisting of the Sailor's Sea-Book, by JAMES GREENWOOD and W. H. ROSSER ; together with the requisite Mathematical and Nautical Tables for the Working of the Problems. By HENRY LAW, C.E., and Professor J. R. YOUNG. Illustrated with numerous Wood Engravings and Coloured Plates. 12mo, 7s. strongly half bound in leather.

WEALE'S RUDIMENTARY SERIES.

The following books in Naval Architecture, etc., are published in the above series.

- MASTING, MAST-MAKING, AND RIGGING OF SHIPS. By ROBERT KIPPING, N.A. Fourteenth Edition. 12mo, 2s. 6d. cloth.
- SAILS AND SAIL-MAKING. Tenth Edition, enlarged. By ROBERT KIPPING, N.A. Illustrated. 12mo, 3s. cloth boards.
- NAVAL ARCHITECTURE. By JAMES PEAKE. Fourth Edition, with Plates and Diagrams. 12mo, 4s. cloth boards.
- MARINE ENGINES, AND STEAM VESSELS. By ROBERT MURRAY, C.E. Seventh Edition. 12mo, 3s. 6d. cloth boards.

ARCHITECTURE, BUILDING, ETC.

Construction.

THE SCIENCE OF BUILDING: An Elementary Treatise on the Principles of Construction. By E. WYNDHAM TARN, M.A., Architect. With 58 Wood Engravings. 2nd Edition, revised and enlarged. Crown 8vo, 7s. 6d. cloth.

"A very valuable book, which we strongly recommend to all students."—*Builder*.

"No architectural student should be without this hand-book."—*Architect*.

Villa Architecture.

A HANDY BOOK OF VILLA ARCHITECTURE; being a Series of Designs for Villa Residences in various Styles. With Detailed Specifications and Estimates. By C. WICKES, Architect, Author of "The Spires and Towers of the Mediæval Churches of England," &c. 31 Plates, 4to, half morocco, gilt edges, 1l. 1s.

* * Also an Enlarged edition of the above. 61 Plates, with Detailed Specifications, Estimates, &c. 2l. 2s. half morocco.

"The whole of the designs bear evidence of their being the work of an artistic architect, and they will prove very valuable and suggestive."—*Building News*.

Useful Text-Book for Architects.

THE ARCHITECT'S GUIDE: Being a Text-book of Useful Information for Architects, Engineers, Surveyors, Contractors, Clerks of Works, &c. By FREDERICK ROGERS. Author of "Specifications for Practical Architecture," &c. Cr. 8vo, 6s. cloth.

"As a text-book of useful information for architects, engineers, surveyors, &c., it would be hard to find a handier or more complete little volume."—*Standard*.

Taylor and Cresy's Rome.

THE ARCHITECTURAL ANTIQUITIES OF ROME. By the late G. L. TAYLOR, Esq., F.S.A., and EDWARD CRESY, Esq. New Edition, Edited by the Rev. ALEXANDER TAYLOR, M.A. (son of the late G. L. Taylor, Esq.), Chaplain of Gray's Inn. This is the only book which gives on a large scale, and with the precision of architectural measurement, the principal Monuments of Ancient Rome in plan, elevation, and detail. Large folio, with 130 Plates, half-bound, 3l. 3s.

* * Originally published in two volumes, folio, at 18l. 18s.

Vitruvius' Architecture.

THE ARCHITECTURE OF MARCUS VITRUVIUS POLLIO. Translated by JOSEPH GWILT, F.S.A., F.R.A.S. Numerous Plates. 12mo, cloth limp, 5s.

The Young Architect's Book.

HINTS TO YOUNG ARCHITECTS. By GEORGE WIGHTWICK, Architect. New Edition, revised and enlarged. By G. HUSKISSON GUILLAUME, Architect. 12mo, cloth boards, 4s.

"Will be found an acquisition to pupils, and a copy ought to be considered as necessary a purchase as a box of instruments."—*Architect*.

"A large amount of information, which young architects will do well to acquire, if they wish to succeed in the everyday work of their profession."—*English Mechanic*.

Drawing for Builders and Students.

PRACTICAL RULES ON DRAWING for the OPERATIVE BUILDER and YOUNG STUDENT in ARCHITECTURE, By GEORGE PYNE. With 14 Plates, 4to, 7s. 6d. boards,

Cement.

PORTLAND CEMENT FOR USERS. By HENRY FAIJA, A.M., Inst. C.E., with Illustrations. Crown 8vo. 3s. 6d. cloth.

"A useful compendium of results for the practical builder and architect."—*Building News*.

The House-Owner's Estimator.

THE HOUSE-OWNER'S ESTIMATOR; or, What will it Cost to Build, Alter, or Repair? A Price-Book adapted to the Use of Unprofessional People as well as for the Architectural Surveyor and Builder. By the late JAMES D. SIMON, A.R.I.B.A. Edited and Revised by FRANCIS T. W. MILLER, A.R.I.B.A., Surveyor. Third Edition, Revised. Crown 8vo, 3s. 6d., cloth.

"In two years it will repay its cost a hundred times over."—*Field*.

"A very handy book for those who want to know what a house will cost to build, alter, or repair."—*English Mechanic*.

Boiler and Factory Chimneys.

BOILER AND FACTORY CHIMNEYS; their Draught-power and Stability, with a chapter on Lightning Conductors. By ROBERT WILSON, C.E. Crown 8vo, 3s. 6d. cloth.

Civil and Ecclesiastical Building.

A BOOK ON BUILDING, CIVIL AND ECCLESIASTICAL, Including CHURCH RESTORATION. By Sir EDMUND BECKETT, Bart., LL.D., Q.C., F.R.A.S., Chancellor and Vicar-General of York. Author of "Clocks and Watches and Bells," &c. Second Edition, 12mo, 5s. cloth boards.

"A book which is always amusing and nearly always instructive. Sir E. Beckett will be read for the raciness of his style. We are able very cordially to recommend all persons to read it for themselves."—*Times*.

"We commend the book to the thoughtful consideration of all who are interested in the building art."—*Builder*.

Architecture, Ancient and Modern.

RUDIMENTARY ARCHITECTURE, Ancient and Modern. Consisting of VITRUVIUS, translated by JOSEPH GWILT, F.S.A., &c., with 23 fine copper plates; GRECIAN Architecture, by the EARL of ABERDEEN; the ORDERS of Architecture, by W. H. LEEDS, Esq.; The STYLES of Architecture of Various Countries, by T. TALBOT BURY; The PRINCIPLES of DESIGN in Architecture, by E. L. GARBETT. In one volume, half-bound (pp. 1,100), copiously illustrated, 12s.

* * Sold separately, in two vols., as follows—

ANCIENT ARCHITECTURE. Containing Gwilt's Vitruvius and Aberdeen's Grecian Architecture. Price 6s. half-bound.

N.B.—This is the only edition of VITRUVIUS procurable at a moderate price.

MODERN ARCHITECTURE. Containing the Orders, by Leeds; The Styles, by Bury; and Design, by Garbett. 6s. half-bound.

House Painting.

HOUSE PAINTING, GRAINING, MARBLING, AND SIGN WRITING: a Practical Manual of. With 9 Coloured Plates of Woods and Marbles, and nearly 150 Wood Engravings. By ELLIS A. DAVIDSON. Third Edition, Revised. 12mo, 6s. cloth.

"Contains a mass of information of use to the amateur and of value to the practical man."—*English Mechanic*.



Plumbing.

PLUMBING; a Text-book to the Practice of the Art or Craft of the Plumber. With chapters upon House-drainage, embodying the latest Improvements. By W. P. BUCHAN, Sanitary Engineer. Third Edition, enlarged, with 300 illustrations, 12mo. 4s. cloth.

"The chapters on house-drainage may be usefully consulted, not only by plumbers, but also by engineers and all engaged or interested in house-building."—*Iron.*

Handbook of Specifications.

THE HANDBOOK OF SPECIFICATIONS; or, Practical Guide to the Architect, Engineer, Surveyor, and Builder, in drawing up Specifications and Contracts for Works and Constructions. Illustrated by Precedents of Buildings actually executed by eminent Architects and Engineers. By Professor THOMAS L. DONALDSON, M.I.B.A. New Edition, in One large volume, 8vo, with upwards of 1000 pages of text, and 33 Plates, cloth, 17. 11s. 6d.

"In this work forty-four specifications of executed works are given. . . . Donaldson's Handbook of Specifications must be bought by all architects."—*Builder.*

Specifications for Practical Architecture.

SPECIFICATIONS FOR PRACTICAL ARCHITECTURE: A Guide to the Architect, Engineer, Surveyor, and Builder; with an Essay on the Structure and Science of Modern Buildings. By FREDERICK ROGERS, Architect. 8vo, 15s. cloth.

* * A volume of specifications of a practical character being greatly required, and the old standard work of Alfred Bartholomew being out of print, the author, on the basis of that work, has produced the above.—*Extract from Preface.*

Designing, Measuring, and Valuing.

THE STUDENT'S GUIDE to the PRACTICE of MEASURING and VALUING ARTIFICERS' WORKS; containing Directions for taking Dimensions, Abstracting the same, and bringing the Quantities into Bill, with Tables of Constants, and copious Memoranda for the Valuation of Labour and Materials in the respective Trades of Bricklayer and Slater, Carpenter and Joiner, Painter and Glazier, Paperhanger, &c. With 43 Plates and Woodcuts. Originally edited by EDWARD DOBSON, Architect. New Edition, re-written, with Additions on Mensuration and Construction, and useful Tables for facilitating Calculations and Measurements. By E. WYNDHAM TARN, M.A., 8vo, 10s. 6d. cloth.

"Well fulfils the promise of its title-page. Mr. Tarn's additions and revisions have much increased the usefulness of the work."—*Engineering.*

Beaton's Pocket Estimator.

THE POCKET ESTIMATOR FOR THE BUILDING TRADES, being an easy method of estimating the various parts of a Building collectively, more especially applied to Carpenters' and Joiners' work, priced according to the present value of material and labour. By A. C. BEATON, Author of "Quantities and Measurements." Second Edition. Waistcoat-pocket size. 1s. 6d.

Beaton's Builders' and Surveyors' Technical Guide.

THE POCKET TECHNICAL GUIDE AND MEASURER FOR BUILDERS AND SURVEYORS: containing a Complete Explanation of the Terms used in Building Construction, Memoranda for Reference, Technical Directions for Measuring Work in all the Building Trades, &c. By A. C. BEATON. 1s. 6d.

Builder's and Contractor's Price Book.

LOCKWOOD & CO.'S BUILDER'S AND CONTRACTOR'S PRICE BOOK, containing the latest prices of all kinds of Builders' Materials and Labour, and of all Trades connected with Building, &c., &c. The whole revised and edited by F. T. W. MILLER, A.R.I.B.A. Fcap. half-bound, 4s.

CARPENTRY, TIMBER, ETC.

Tredgold's Carpentry, new and cheaper Edition.

THE ELEMENTARY PRINCIPLES OF CARPENTRY : a Treatise on the Pressure and Equilibrium of Timber Framing, the Resistance of Timber, and the Construction of Floors, Arches, Bridges, Roofs, Uniting Iron and Stone with Timber, &c. To which is added an Essay on the Nature and Properties of Timber, &c., with Descriptions of the Kinds of Wood used in Building ; also numerous Tables of the Scantlings of Timber for different purposes, the Specific Gravities of Materials, &c. By THOMAS TREDGOLD, C.E. Edited by PETER BARLOW, F.R.S. Fifth Edition, corrected and enlarged. With 64 Plates, Portrait of the Author, and Woodcuts. 4to, published at 2l. 2s., reduced to 1l. 5s. cloth.

"Ought to be in every architect's and every builder's library, and those who do not already possess it ought to avail themselves of the new issue."—*Builder*.

"A work whose monumental excellence must commend it wherever skilful carpentry is concerned. The Author's principles are rather confirmed than impaired by time. The additional plates are of great intrinsic value."—*Building News*.

Grandy's Timber Tables.

THE TIMBER IMPORTER'S, TIMBER MERCHANT'S, and BUILDER'S STANDARD GUIDE. By RICHARD E. GRANDY.

2nd Edition. Carefully revised and corrected. 12mo, 3s. 6d. cloth.

"Everything it pretends to be : built up gradually, it leads one from a forest to a treenail, and throws in, as a makeweight, a host of material concerning bricks, columns, cisterns, &c.—all that the class to whom it appeals requires."—*English Mechanic*.

Timber Freight Book.

THE TIMBER IMPORTERS' AND SHIPOWNERS' FREIGHT BOOK : Being a Comprehensive Series of Tables for the Use of Timber Importers, Captains of Ships, Shipbrokers, Builders, and all Dealers in Wood whatsoever. By WILLIAM RICHARDSON, Timber Broker. Crown 8vo, 6s. cloth.

Tables for Packing-Case Makers.

PACKING-CASE TABLES ; showing the number of Superficial Feet in Boxes or Packing-Cases, from six inches square and upwards. By W. RICHARDSON. Oblong 4to, 3s. 6d. cloth.

"Invaluable labour-saving tables."—*Ironmonger*.

Coach Building.

COACH BUILDING : A Practical Treatise, Historical and Descriptive, containing full information of the various Trades and Processes involved, with Hints on the proper keeping of Carriages, &c. With 57 Illustrations. By JAMES W. BURGESS. 12mo, 3s., cloth boards,

[Just published.]

PUBLISHED BY CROSBY LOCKWOOD & CO.

Horton's Measurer.

THE COMPLETE MEASURER; setting forth the Measurement of Boards, Glass, &c.; Unequal-sided, Square-sided, Octagonal-sided, Round Timber and Stone, and Standing Timber. With just allowances for the bark in the respective species of trees, and proper deductions for the waste in hewing the trees, &c.; also a Table showing the solidity of hewn or eight-sided timber, or of any octagonal-sided column. By RICHARD HORTON. Third edition, with considerable and valuable additions, 12mo, strongly bound in leather, 5s.

Horton's Underwood and Woodland Tables.

TABLES FOR PLANTING AND VALUING UNDERWOOD AND WOODLAND; also Lineal, Superficial, Cubical, and Decimal Tables, &c. By R. HORTON. 12mo, 2s. leather.

Nicholson's Carpenter's Guide.

THE CARPENTER'S NEW GUIDE; or, BOOK of LINES for CARPENTERS; comprising all the Elementary Principles essential for acquiring a knowledge of Carpentry. Founded on the late PETER NICHOLSON'S standard work. A new Edition, revised by ARTHUR ASHPITEL, F.S.A., together with Practical Rules on Drawing, by GEORGE PYNE. With 74 Plates, 4to, 1l. 1s. cloth.

Dowsing's Timber Merchant's Companion.

THE TIMBER MERCHANT'S AND BUILDER'S COMPANION; containing New and Copious Tables of the Reduced Weight and Measurement of Deals and Battens, of all sizes, from One to a Thousand Pieces, also the relative Price that each size bears per Lineal Foot to any given Price per Petersburg Standard Hundred, &c., &c. Also a variety of other valuable information. By WILLIAM DOWSING, Timber Merchant. Third Edition, Revised. Crown 8vo, 3s. cloth.

"Everything is as concise and clear as it can possibly be made. There can be no doubt that every timber merchant and builder ought to possess it."—*Hull Advertiser.*

Practical Timber Merchant.

THE PRACTICAL TIMBER MERCHANT, being a Guide for the use of Building Contractors, Surveyors, Builders, &c., comprising useful Tables for all purposes connected with the Timber Trade, Essay on the Strength of Timber, Remarks on the Growth of Timber, &c. By W. RICHARDSON. Fcap. 8vo, 3s. 6d. cl.

Woodworking Machinery.

WOODWORKING MACHINERY; its Rise, Progress, and Construction. With Hints on the Management of Saw Mills and the Economical Conversion of Timber. Illustrated with Examples of Recent Designs by leading English, French, and American Engineers. By M. POWIS BALE, M.I.M.E. Large crown 8vo, 12s. 6d. cloth.

"Mr. Bale is evidently an expert on the subject, and he has collected so much information that his book is all-sufficient for builders and others engaged in the conversion of timber."—*Architect.*

"The most comprehensive compendium of wood-working machinery we have seen. The author is a thorough master of his subject."—*Building News.*

"It should be in the office of every wood-working factory."—*English Mechanic.*



MECHANICS, ETC.

Turning.

LATHE-WORK: a Practical Treatise on the Tools, Appliances, and Processes employed in the Art of Turning. By PAUL N. HASLUCK. With numerous Illustrations drawn by the Author. Crown 8vo, 5s. cloth.

[Just published.]

"Evidently written from personal experience, and gives a large amount of just that sort of information which beginners at the lathe require."—*Builder*.

"Expounds the art and mystery of the turner in an informative fashion."—*Scotsman*.

"Mr. Hasluck's book will be a boon to amateurs."—*Architect*.

Mechanic's Workshop Companion.

THE OPERATIVE MECHANIC'S WORKSHOP COMPANION, and THE SCIENTIFIC GENTLEMAN'S PRACTICAL ASSISTANT. By W. TEMPLETON. 12th Edit., with Mechanical Tables for Operative Smiths, Millwrights, Engineers, &c.; and an Extensive Table of Powers and Roots, 12mo, 5s. bound.

"Admirably adapted to the wants of a very large class. It has met with great success in the engineering workshop, as we can testify; and there are a great many men who, in a great measure, owe their rise in life to this little work."—*Building News*.

Engineer's and Machinist's Assistant.

THE ENGINEER'S, MILLWRIGHT'S, and MACHINIST'S PRACTICAL ASSISTANT; comprising a Collection of Useful Tables, Rules, and Data. By WM. TEMPLETON. 18mo, 2s. 6d.

"A more suitable present to an apprentice to any of the mechanical trades could not possibly be made."—*Building News*.

Superficial Measurement.

THE TRADESMAN'S GUIDE TO SUPERFICIAL MEASUREMENT. Tables calculated from 1 to 200 inches in length, by 1 to 108 inches in breadth. For the use of Architects, Engineers, Timber Merchants, Builders, &c. By J. HAWKINGS. Fcp. 3s. 6d. cl.

The High-Pressure Steam Engine.

THE HIGH-PRESSURE STEAM ENGINE; an Exposition of its Comparative Merits, and an Essay towards an Improved System of Construction, adapted especially to secure Safety and Economy. By Dr. ERNST ALBAN. Translated from the German, with Notes, by Dr. POLE, F.R.S. 8vo, 16s. 6d. cloth.

Steam Boilers.

A TREATISE ON STEAM BOILERS: their Strength, Construction, and Economical Working. By R. WILSON, C.E. Fifth Edition. 12mo, 6s. cloth.

"The best work on boilers which has come under our notice."—*Engineering*.

"The best treatise that has ever been published on steam boilers."—*Engineer*.

Power in Motion.

POWER IN MOTION: Horse Power, Toothed Wheel Gearing, Long and Short Driving Bands, Angular Forces, &c. By JAMES ARMOUR, C.E. With 73 Diagrams. 12mo, 3s., cloth.

Mechanics.

THE HANDBOOK OF MECHANICS. By DIONYSIUS LARDNER, D.C.L. New Edition, Edited and considerably Enlarged, by BENJAMIN LOEWY, F.R.A.S., &c., post 8vo, 6s. cloth.

"Studiously popular . . . The application of the various branches of physics to the industrial arts is carefully shown."—*Mining Journal*.

MATHEMATICS, TABLES, ETC.

Gregory's Practical Mathematics.

MATHEMATICS for PRACTICAL MEN ; being a Common-place Book of Pure and Mixed Mathematics. Designed chiefly for the Use of Civil Engineers, Architects, and Surveyors. Part I. PURE MATHEMATICS—comprising Arithmetic, Algebra, Geometry, Mensuration, Trigonometry, Conic Sections, Properties of Curves. Part II. MIXED MATHEMATICS—comprising Mechanics in general, Statics, Dynamics, Hydrostatics, Hydrodynamics, Pneumatics, Mechanical Agents, Strength of Materials. With an Appendix of copious Logarithmic and other Tables. By OLINTHUS GREGORY, LL.D., F.R.A.S. Enlarged by HENRY LAW, C.E. 4th Edition, revised by Prof. J. R. YOUNG. With 13 Plates. 8vo, 1*l.* 1*s.* cloth.

"The engineer or architect will here find ready to his hand, rules for solving nearly every mathematical difficulty that may arise in his practice."—*Builder.*

The Metric System.

A SERIES OF METRIC TABLES, in which the British Standard Measures and Weights are compared with those of the Metric System at present in use on the Continent. By C. H. DOWLING, C.E. 2nd Edit., revised and enlarged. 8vo, 10*s.* 6*d.* cl.

"Their accuracy has been certified by Prof. Airy, Astronomer-Royal."—*Builder.*

Inwood's Tables, greatly enlarged and improved.

TABLES FOR THE PURCHASING OF ESTATES, Freehold, Copyhold, or Leasehold ; Annuities, Advowsons, &c., and for the Renewing of Leases held under Cathedral Churches, Colleges, or other corporate bodies ; for Terms of Years certain, and for Lives ; also for Valuing Reversionary Estates, Deferred Annuities, Next Presentations, &c., together with Smart's Five Tables of Compound Interest, and an Extension of the same to Lower and Intermediate Rates. By WILLIAM INWOOD. 21st edition, with Tables of Logarithms for the more Difficult Computations of the Interest of Money, Discount, &c. By M. FÉDOR THOMAN. 12mo, 8*s.* cloth.

"Those interested in the purchase and sale of estates, and in the adjustment of compensation cases, as well as in transactions in annuities, life insurances, &c., will find the present edition of eminent service."—*Engineering.*

Geometry for the Architect, Engineer, &c.

PRACTICAL GEOMETRY, for the Architect, Engineer, and Mechanic. By E. W. TARN, M.A., Architect. Second Edition, with Appendices on Diagrams of Strains and Isometrical projections. Demy 8vo, 9*s.* cloth.

Mathematical Instruments.

MATHEMATICAL INSTRUMENTS: Their Construction, Adjustment, Testing, and Use ; comprising Drawing, Measuring, Optical, Surveying, and Astronomical Instruments. By J. F. HEATHER, M.A. Enlarged Edition. 12mo, 5*s.* cloth.

Weights, Measures, Moneys, &c.

MEASURES, WEIGHTS, and MONEYS of all NATIONS, and an Analysis of the Christian, Hebrew, and Mahometan Calendars. Entirely New Edition, Revised and Enlarged. By W. S. B. WOOLHOUSE, F.R.A.S. 12mo, 2*s.* 6*d.* cloth boards.

Compound Interest and Annuities.

THEORY of COMPOUND INTEREST and ANNUITIES; with Tables of Logarithms for the more Difficult Computations of Interest, Discount, Annuities, &c., in all their Applications and Uses for Mercantile and State Purposes. By FÉDOR THOMAN, of the Société Crédit Mobilier, Paris. 3rd Edit., 12mo, 4s. 6d. cl.

"A very powerful work, and the Author has a very remarkable command of his subject."—*Professor A. de Morgan.*

Iron and Metal Trades' Calculator.

THE IRON AND METAL TRADES' COMPANION: Being a Calculator containing a Series of Tables upon a new and comprehensive plan for expeditiously ascertaining the value of any goods bought or sold by weight, from 1s. per cwt. to 112s. per cwt., and from one farthing per lb. to 1s. per lb. Each Table extends from one lb. to 100 tons. By T. DOWNIE. 396 pp., 9s., leather.

"A most useful set of tables, and will supply a want, for nothing like them before existed."—*Building News.*

Iron and Steel.

'IRON AND STEEL': a Work for the Forge, Foundry, Factory, and Office. Containing Information for Ironmasters and their Stocktakers; Managers of Bar, Rail, Plate, and Sheet Rolling Mills; Iron and Metal Founders; Iron Ship and Bridge Builders; Mechanical, Mining, and Consulting Engineers; Architects, Builders, &c. By CHARLES HOARE, Author of 'The Slide Rule,' &c. Eighth Edition. With folding Scales of "Foreign Measures compared with the English Foot," and "fixed Scales of Squares, Cubes, and Roots, Areas, Decimal Equivalents, &c." Oblong, 32mo, 6s., leather, elastic-band.

"For comprehensiveness the book has not its equal."—*Iron.*

Comprehensive Weight Calculator.

THE WEIGHT CALCULATOR, being a Series of Tables upon a New and Comprehensive Plan, exhibiting at one Reference the exact Value of any Weight from 1lb. to 15 tons, at 300 Progressive Rates, from 1 Penny to 168 Shillings per cwt., and containing 186,000 Direct Answers, which, with their Combinations, consisting of a single addition (mostly to be performed at sight), will afford an aggregate of 10,266,000 Answers; the whole being calculated and designed to ensure Correctness and promote Despatch. By HENRY HARBEN, Accountant, Sheffield. New Edition. Royal 8vo, 17. 5s., strongly half-bound.

Comprehensive Discount Guide.

THE DISCOUNT GUIDE: comprising several Series of Tables for the use of Merchants, Manufacturers, Ironmongers, and others, by which may be ascertained the exact profit arising from any mode of using Discounts, either in the Purchase or Sale of Goods, and the method of either Altering a Rate of Discount, or Advancing a Price, so as to produce, by one operation, a sum that will realise any required profit after allowing one or more Discounts: to which are added Tables of Profit or Advance from $1\frac{1}{4}$ to 90 per cent., Tables of Discount from $1\frac{1}{4}$ to $98\frac{3}{4}$ per cent., and Tables of Commission, &c., from $\frac{1}{8}$ to 10 per cent. By HENRY HARBEN, Accountant. New Edition. Demy 8vo, 17. 5s., half-bound.

SCIENCE AND ART.

The Construction of the Organ.

PRACTICAL ORGAN BUILDING. By W. E. DICKSON, M.A., Precentor of Ely Cathedral. Crown 8vo, 5s. cloth.

"In many respects the book is the best that has yet appeared on the subject. We cordially recommend it."—*English Mechanic*.

"Any practical amateur following the instructions here given might build an organ to his entire satisfaction."—*Leeds Mercury*.

Dentistry.

MECHANICAL DENTISTRY. A Practical Treatise on the Construction of the various kinds of Artificial Dentures. Comprising also Useful Formulæ, Tables, and Receipts for Gold Plate, Clasps, Solders, etc., etc. By CHARLES HUNTER. With numerous Wood Engravings. Crown 8vo, 7s. 6d. cloth.

"The work is very practical."—*Monthly Review of Dental Surgery*.

"An authoritative treatise We can strongly recommend Mr. Hunter's treatise to all students preparing for the profession of dentistry, as well as to every mechanical dentist."—*Dublin Journal of Medical Science*. [and Circular.

"The best book on the subject with which we are acquainted."—*Medical Press*.

Brewing.

A HANDBOOK FOR YOUNG BREWERS. By HERBERT EDWARDS WRIGHT, B.A. Crown 8vo, 3s. 6d. cloth.

"A thoroughly scientific treatise in popular language. It is evident that the author has mastered his subject in its scientific aspects."—*Morning Advertiser*.

"We would particularly recommend teachers of the art to place it in every pupil's hands, and we feel sure its perusal will be attended with advantage."—*Brewer*.

Gold and Gold-Working.

THE GOLDSMITH'S HANDBOOK: containing full instructions for the Alloying and Working of Gold. Including the Art of Alloying, Melting, Reducing, Colouring, Collecting and Refining. The processes of Manipulation, Recovery of Waste, Chemical and Physical Properties of Gold, with a new System of Mixing its Alloys; Solders, Enamels, and other useful Rules and Recipes, &c. By GEORGE E. GEE, Goldsmith and Silversmith. Second Edition, considerably enlarged. 12mo, 3s. 6d. cloth boards.

"The best work yet printed on its subject for a reasonable price."—*Jeweller*.

"We consider that the trade owes not a little to Mr. Gee, who has in two volumes compressed almost the whole of its literature, and we doubt not that many a young beginner will owe a part of his future success to a diligent study of the pages which are peculiarly well adapted to his use."—*Clerkenwell Press*.

"Essentially a practical manual, well adapted to the wants of amateurs and apprentices, containing trustworthy information that only a practical man can supply."—*English Mechanic*.

Silver and Silver Working.

THE SILVERSMITH'S HANDBOOK, containing full Instructions for the Alloying and Working of Silver, including the different modes of refining and melting the metal, its solders, the preparation of imitation alloys, &c. By GEORGE E. GEE, Jeweller, &c. 12mo, 3s. 6d. cloth boards.

"The chief merit of the work is its practical character. The workers in the trade will speedily discover its merits when they sit down to study it."—*English Mechanic*.

"This work forms a valuable sequel to the author's *Practical Goldworker*, and supplies a want long felt in the silver trade."—*Silversmith's Trade Journal*.

Electric Lighting.

ELECTRIC LIGHT: Its Production and Use, embodying plain Directions for the Working of Galvanic Batteries, Electric Lamps, and Dynamo-Electric Machines. By J. W. URQUHART, C. E., Author of "Electroplating: a Practical Handbook." Edited by F. C. WEBB, M.I.C.E., M.S.T.E. With 94 Illustrations. Crown 8vo, 7s. 6d. cloth.

"It is the only work at present available, which gives a general but concise history of the means [which have been adopted up to the present time in producing the electric light]."—*Metropolitan*.

"An important addition to the literature of the electric light. Students of the subject should not fail to read it."—*Colliery Guardian*.

Electroplating, &c.

ELECTROPLATING: A Practical Handbook. By J. W. URQUHART, C.E. Crown 8vo, 5s. cloth.

"A large amount of thoroughly practical information."—*Telegraphic Journal*.

"An excellent practical manual."—*Engineering*.

"The information given appears to be based on direct personal knowledge. . . . Its science is sound, and the style is always clear."—*Athenæum*.

"An ordinarily intelligent person may become an adept in electro-deposition with a very little science indeed, and this is the book to show him or her the way."—*Builder*.

"The volume is without a rival in its particular sphere."—*Design and Work*.

Electrotyping, &c.

ELECTROTYPING: a Practical Manual on the Reproduction and Multiplication of Printing Surfaces and Works of Art by the Electro-deposition of Metals. By J. W. URQUHART, C.E. Crown 8vo, 5s. cloth. [Just published.]

"Will serve as a guide, not only to beginners in the art, but to those who still practise the old and imperfect methods of electrotyping."—*Iron*.

"The book throughout is entirely practical, is lucid and clear in style, and the minutest details are so stated that amateurs will find no difficulty whatever in following them out. We have no hesitation in recommending it as a reliable work."—*Paper and Printing Trades Journal*.

The Military Sciences.

AIDE-MÉMOIRE to the MILITARY SCIENCES. Framed from Contributions of Officers and others connected with the different Services. Originally edited by a Committee of the Corps of Royal Engineers. Second Edition, most carefully revised by an Officer of the Corps, with many additions; containing nearly 350 Engravings and many hundred Woodcuts. 3 vols. royal 8vo, extra cloth boards, and lettered, 4l. 10s.

Field Fortification.

A TREATISE on FIELD FORTIFICATION, the ATTACK of FORTRESSES, MILITARY MINING, and RECON-NOITRING. By Colonel I. S. MACAULAY, late Professor of Fortification in the R. M. A., Woolwich. Sixth Edition, crown 8vo, cloth, with separate Atlas of 12 Plates, 12s. complete.

Dye-Wares and Colours.

THE MANUAL of COLOURS and DYE-WARES: their Properties, Applications, Valuation, Impurities, and Sophistications. For the Use of Dyers, Printers, Drysalters, Brokers, &c. By J. W. SLATER. Post 8vo, 7s. 6d. cloth.

The Alkali Trade—Sulphuric Acid,

A MANUAL OF THE ALKALI TRADE, including the Manufacture of Sulphuric Acid, Sulphate of Soda, and Bleaching Powder. By JOHN LOMAS, Alkali Manufacturer, Newcastle-upon-Tyne and London. With 232 Illustrations and Working Drawings, and containing 386 pages of text. Super-royal 8vo, 2l 12s. 6d. cloth. [Just published.]

This work provides (1) a Complete Handbook for intending Alkali and Sulphuric Acid Manufacturers, and for those already in the field who desire to improve their plant, or to become practically acquainted with the latest processes and developments of the trade; (2) a Handy Volume which Manufacturers can put into the hands of their Managers and Foremen as a useful guide in their daily rounds of duty.

SYNOPSIS OF CONTENTS.

Chap. I. Choice of Site and General Plan of Works—II. Sulphuric Acid—III. Recovery of the Nitrogen Compounds, and Treatment of Small Pyrites—IV. The Salt Cake Process—V. Legislation upon the Noxious Vapours Question—VI. The 'Hargreaves' and Jones' Processes—VII. The Balling Process—VIII. Lixiviation and Salting Down—	IX. Carbonating or Finishing—X. Soda Crystals—XI. Refined Alkali—XII. Caustic Soda—XIII. Bi-carbonate of Soda—XIV. Bleaching Powder—XV. Utilisation of Tank Waste—XVI. General Remarks—Four Appendices, treating of Yields, Sulphuric Acid Calculations, Anemometers, and Foreign Legislation upon the Noxious Vapours Question.
--	--

"The author has given the fullest, most practical, and, to all concerned in the alkali trade, most valuable mass of information that, to our knowledge, has been published in any language."—*Engineer*.

"This book is written by a manufacturer for manufacturers. The working details of the most approved forms of apparatus are given, and these are accompanied by no less than 232 wood engravings, all of which may be used for the purposes of construction. Every step in the manufacture is very fully described in this manual, and each improvement explained. Everything which tends to introduce economy into the technical details of this trade receives the fullest attention. The book has been produced with great completeness."—*Athenæum*.

"The author is not one of those clever compilers who, on short notice, will 'read up' any conceivable subject, but a practical man in the best sense of the word. We find here not merely a sound and luminous explanation of the chemical principles of the trade, but a notice of numerous matters which have a most important bearing on the successful conduct of alkali works, but which are generally overlooked by even the most experienced technological authors. This most valuable book, which we trust will be generally appreciated, we must pronounce a credit alike to its author and to the enterprising firm who have undertaken its publication."—*Chemical Review*.

Chemical Analysis.

THE COMMERCIAL HANDBOOK of CHEMICAL ANALYSIS; or Practical Instructions for the determination of the Intrinsic or Commercial Value of Substances used in Manufactures, in Trades, and in the Arts. By A. NORMANDY, Author of "Practical Introduction to Rose's Chemistry," and Editor of Rose's "Treatise on Chemical Analysis." *New Edition*. Enlarged, and to a great extent re-written, by HENRY M. NOAD, Ph. D., F.R.S. With numerous Illustrations. Cr. 8vo, 12s. 6d. cloth.

"We recommend this book to the careful perusal of every one; it may be truly affirmed to be of universal interest, and we strongly recommend it to our readers as a guide, alike indispensable to the housewife as to the pharmaceutical practitioner."—*Medical Times*.

"Essential to the analysts appointed under the new Act. The most recent results are given, and the work is well edited and carefully written."—*Nature*.

Dr. Lardner's Museum of Science and Art.

THE MUSEUM OF SCIENCE AND ART. Edited by DIONYSIUS LARDNER, D.C.L., formerly Professor of Natural Philosophy and Astronomy in University College, London. With upwards of 1200 Engravings on Wood. In 6 Double Volumes. Price £1 1s., in a new and elegant cloth binding, or handsomely bound in half morocco, 31s. 6d.

OPINIONS OF THE PRESS.

"This series, besides affording popular but sound instruction on scientific subjects, with which the humblest man in the country ought to be acquainted, also undertakes that teaching of 'common things' which every well-wisher of his kind is anxious to promote. Many thousand copies of this serviceable publication have been printed, in the belief and hope that the desire for instruction and improvement widely prevails; and we have no fear that such enlightened faith will meet with disappointment."—*Times*.

"A cheap and interesting publication, alike informing and attractive. The papers combine subjects of importance and great scientific knowledge, considerable inductive powers, and a popular style of treatment."—*Spectator*.

"The 'Museum of Science and Art' is the most valuable contribution that has ever been made to the Scientific Instruction of every class of society."—*Sir David Brewster in the North British Review*.

"Whether we consider the liberality and beauty of the illustrations, the charm of the writing, or the durable interest of the matter, we must express our belief that there is hardly to be found among the new books, one that would be welcomed by people of so many ages and classes as a valuable present."—*Examiner*.

* * *Separate books formed from the above, suitable for Workmen's Libraries, Science Classes, &c.*

COMMON THINGS EXPLAINED. Containing Air, Earth, Fire, Water, Time, Man, the Eye, Locomotion, Colour, Clocks and Watches, &c. 233 Illustrations, cloth gilt, 5s.

THE MICROSCOPE. Containing Optical Images, Magnifying Glasses, Origin and Description of the Microscope, Microscopic Objects, the Solar Microscope, Microscopic Drawing and Engraving, &c. 147 Illustrations, cloth gilt, 2s.

POPULAR GEOLOGY. Containing Earthquakes and Volcanoes, the Crust of the Earth, etc. 201 Illustrations, cloth gilt, 2s. 6d.

POPULAR PHYSICS. Containing Magnitude and Minuteness, the Atmosphere, Meteoric Stones, Popular Fallacies, Weather Prognostics, the Thermometer, the Barometer, Sound, &c. 85 Illustrations, cloth gilt, 2s. 6d.

STEAM AND ITS USES. Including the Steam Engine, the Locomotive, and Steam Navigation. 89 Illustrations, cloth gilt, 2s.

POPULAR ASTRONOMY. Containing How to Observe the Heavens. The Earth, Sun, Moon, Planets. Light, Comets, Eclipses, Astronomical Influences, &c. 182 Illustrations, 4s. 6d.

THE BEE AND WHITE ANTS: Their Manners and Habits. With Illustrations of Animal Instinct and Intelligence. 135 Illustrations, cloth gilt, 2s.

THE ELECTRIC TELEGRAPH POPULARISED. To render intelligible to all who can Read, irrespective of any previous Scientific Acquirements, the various forms of Telegraphy in Actual Operation. 100 Illustrations, cloth gilt, 1s. 6d.

Dr. Lardner's Handbooks of Natural Philosophy.

* * The following five volumes, though each is Complete in itself, and to be purchased separately, form A COMPLETE COURSE OF NATURAL PHILOSOPHY, and are intended for the general reader who desires to attain accurate knowledge of the various departments of Physical Science, without pursuing them according to the more profound methods of mathematical investigation. The style is studiously popular. It has been the author's aim to supply Manuals such as are required by the Student, the Engineer, the Artisan, and the superior classes in Schools.

THE HANDBOOK OF MECHANICS. Enlarged and almost rewritten by BENJAMIN LOEWY, F.R.A.S. With 378 Illustrations. Post 8vo, 6s. cloth.

"The perspicuity of the original has been retained, and chapters which had become obsolete, have been replaced by others of more modern character. The explanations throughout are studiously popular, and care has been taken to show the application of the various branches of physics to the industrial arts, and to the practical business of life."—*Mining Journal*.

THE HANDBOOK OF HYDROSTATICS and PNEUMATICS. New Edition, Revised and Enlarged by BENJAMIN LOEWY, F.R.A.S. With 236 Illustrations. Post 8vo, 5s. cloth.

"For those 'who desire to attain an accurate knowledge of physical science without the profound methods of mathematical investigation,' this work is not merely intended, but well adapted."—*Chemical News*.

THE HANDBOOK OF HEAT. Edited and almost entirely rewritten by BENJAMIN LOEWY, F.R.A.S., etc. 117 Illustrations. Post 8vo, 6s. cloth.

"The style is always clear and precise, and conveys instruction without leaving any cloudiness or lurking doubts behind."—*Engineering*.

THE HANDBOOK OF OPTICS. New Edition. Edited by T. OLVER HARDING, B.A. 298 Illustrations. Post 8vo, 5s. cloth.

"Written by one of the ablest English scientific writers, beautifully and elaborately illustrated."—*Mechanics' Magazine*.

THE HANDBOOK OF ELECTRICITY, MAGNETISM, and ACOUSTICS. New Edition. Edited by GEO. CAREY FOSTER, B.A., F.C.S. With 400 Illustrations. Post 8vo, 5s. cloth.

"The book could not have been entrusted to any one better calculated to preserve the terse and lucid style of Lardner, while correcting his errors and bringing up his work to the present state of scientific knowledge."—*Popular Science Review*.

Dr. Lardner's Handbook of Astronomy.

THE HANDBOOK OF ASTRONOMY. Forming a Companion to the "Handbooks of Natural Philosophy." By DIONYSIUS LARDNER, D.C.L., formerly Professor of Natural Philosophy and Astronomy in University College, London. Fourth Edition. Revised and Edited by EDWIN DUNKIN, F.R.S., Royal Observatory, Greenwich. With 38 Plates and upwards of 100 Woodcuts. In 1 vol., small 8vo, 550 pages, 9s. 6d., cloth.

"Probably no other book contains the same amount of information in so compendious and well-arranged a form—certainly none at the price at which this is offered to the public."—*Athenæum*.

"We can do no other than pronounce this work a most valuable manual of astronomy, and we strongly recommend it to all who wish to acquire a general—but at the same time correct—acquaintance with this sublime science."—*Quarterly Journal of Science*.

Dr. Lardner's Handbook of Animal Physics.

THE HANDBOOK OF ANIMAL PHYSICS. By DR. LARDNER. With 520 Illustrations. New edition, small 8vo, cloth, 732 pages, 7s. 6d.

"We have no hesitation in cordially recommending it."—*Educational Times*.

Dr. Lardner's School Handbooks.

NATURAL PHILOSOPHY FOR SCHOOLS. By DR. LARDNER.
328 Illustrations. Sixth Edition. 1 vol. 3s. 6d. cloth.

"Conveys, in clear and precise terms, general notions of all the principal divisions of Physical Science."—*British Quarterly Review*.

ANIMAL PHYSIOLOGY FOR SCHOOLS. By DR. LARDNER.
With 190 Illustrations. Second Edition. 1 vol. 3s. 6d. cloth.

"Clearly written, well arranged, and excellently illustrated."—*Gardeners' Chronicle*.

Dr. Lardner's Electric Telegraph.

THE ELECTRIC TELEGRAPH. By DR. LARDNER. New Edition. Revised and Re-written, by E. B. BRIGHT, F.R.A.S.
140 Illustrations. Small 8vo, 2s. 6d. cloth.

"One of the most readable books extant on the Electric Telegraph."—*Eng. Mechanic*.

Electricity.

A MANUAL OF ELECTRICITY; including Galvanism, Magnetism, Diamagnetism, Electro-Dynamics, Magneto-Electricity, and the Electric Telegraph. By HENRY M. NOAD, Ph.D., F.C.S.
Fourth Edition, with 500 Woodcuts. 8vo, 17. 4s. cloth.

"The accounts given of electricity and galvanism are not only complete in a scientific sense, but, which is a rarer thing, are popular and interesting."—*Lancet*.

Text-Book of Electricity.

THE STUDENT'S TEXT-BOOK OF ELECTRICITY. By HENRY M. NOAD, Ph.D., F.R.S., F.C.S. New Edition, carefully Revised. With an Introduction and Additional Chapters by W. H. PREECE, M.I.C.E., Vice-President of the Society of Telegraph Engineers, &c. With 470 Illustrations. Crown 8vo, 12s. 6d. cloth.

"A reflex of the existing state of Electrical Science adapted for students."—W. H. Preece, Esq., vide "Introduction."

"We can recommend Dr. Noad's book for clear style, great range of subject, a good index, and a plethora of woodcuts. Such collections as the present are indispensable."—*Athenæum*.

"An admirable text-book for every student—beginner or advanced—of electricity."—*Engineering*.

"Recommended to students as one of the best text-books on the subject that they can have. Mr. Preece appears to have introduced all the newest inventions in the shape of telegraphic, telephonic, and electric-lighting apparatus."—*English Mechanic*.

"The work contains everything that the student can require."—*Academy*.

"One of the best and most useful compendiums of any branch of science in our literature."—*Iron*.

"Under the editorial hand of Mr. Preece the late Dr. Noad's text-book of electricity has grown into an admirable handbook."—*Westminster Review*.

Carriage Building, &c.

COACH BUILDING: a Practical Treatise, Historical and Descriptive, containing full information of the various Trades and Processes involved, with Hints on the proper Keeping of Carriages, &c. With 57 Illustrations. By JAMES W. BURGESS. 12mo, 3s. cloth boards. [Just published.]

Geology and Genesis.

THE TWIN RECORDS OF CREATION; or, Geology and Genesis, their Perfect Harmony and Wonderful Concord. By GEORGE W. VICTOR LE VAUX. Fcap. 8vo, 5s. cloth.

"A valuable contribution to the evidences of revelation, and disposes very conclusively of the arguments of those who would set God's Works against God's Word. No real difficulty is shirked, and no sophistry is left unexposed."—*The Rock*.

Science and Scripture.

SCIENCE ELUCIDATIVE OF SCRIPTURE, AND NOT ANTAGONISTIC TO IT; being a Series of Essays on—1. Alleged Discrepancies; 2. The Theory of the Geologists and Figure of the Earth; 3. The Mosaic Cosmogony; 4. Miracles in general—Views of Hume and Powell; 5. The Miracle of Joshua—Views of Dr. Colenso: The Supernaturally Impossible; 6. The Age of the Fixed Stars, &c. By Prof. J. R. YOUNG. Fcap. 5s. cl.

Geology.

A CLASS-BOOK OF GEOLOGY: Consisting of "Physical Geology," which sets forth the Leading Principles of the Science; and "Historical Geology," which treats of the Mineral and Organic Conditions of the Earth at each successive epoch, especial reference being made to the British Series of Rocks. By RALPH TATE. With more than 250 Illustrations. Fcap. 8vo, 5s. cloth.

Practical Philosophy.

A SYNOPSIS OF PRACTICAL PHILOSOPHY. By Rev. JOHN CARR, M.A., late Fellow of Trin. Coll., Camb. 18mo, 5s. cl.

Mollusca.

A MANUAL OF THE MOLLUSCA; being a Treatise on Recent and Fossil Shells. By Dr. S. P. WOODWARD, A.L.S. With Appendix by RALPH TATE, A.L.S., F.G.S. With numerous Plates and 300 Woodcuts. 3rd Edition. Cr. 8vo, 7s. 6d. cloth.

Clocks, Watches, and Bells.

RUDIMENTARY TREATISE on CLOCKS, and WATCHES, and BELLS. By Sir EDMUND BECKETT, Bart. (late E. B. Denison), LL.D., Q.C., F.R.A.S. Sixth edition, revised and enlarged. Limp cloth (No. 67, Weale's Series), 4s. 6d.; cloth bds. 5s. 6d.

"As a popular and practical treatise it is unapproached."—*English Mechanic*.

"The best work on the subject probably extant. The treatise on bells is undoubtedly the best in the language."—*Engineering*.

"The only modern treatise on clock-making."—*Horological Journal*.

Grammar of Colouring.

A GRAMMAR OF COLOURING, applied to Decorative Painting and the Arts. By GEORGE FIELD. New edition, enlarged. By ELLIS A. DAVIDSON. With new Coloured Diagrams and Engravings. 12mo, 3s. 6d. cloth.

"The book is a most useful résumé of the properties of pigments."—*Builder*.

Pictures and Painters.

THE PICTURE AMATEUR'S HANDBOOK AND DICTIONARY OF PAINTERS: A Guide for Visitors to Picture Galleries, and for Art-Students, including methods of Painting, Cleaning, Re-Lining, and Restoring, Principal Schools of Painting, Copyists and Imitators. By PHILIPPE DARYL, B.A. Cr. 8vo, 3s. 6d. cl.

Woods and Marbles (Imitation of).

SCHOOL OF PAINTING FOR THE IMITATION OF WOODS AND MARBLES, as Taught and Practised by A. R. and P. VAN DER BURG, Directors of the Rotterdam Painting Institution. Illustrated with 24 full-size Coloured Plates; also 12 Plain Plates, comprising 154 Figures. Folio, 2l. 12s. 6d. bound.

Delamotte's Works on Illumination & Alphabets.

A PRIMER OF THE ART OF ILLUMINATION; for the use of Beginners: with a Rudimentary Treatise on the Art, Practical Directions for its Exercise, and numerous Examples taken from Illuminated MSS., printed in Gold and Colours. By F. DELAMOTTE. Small 4to, 9s. Elegantly bound, cloth antique.

"The examples of ancient MSS. recommended to the student, which, with much good sense, the author chooses from collections accessible to all, are selected with judgment and knowledge, as well as taste."—*Athenæum*.

ORNAMENTAL ALPHABETS, ANCIENT and MEDIÆVAL; from the Eighth Century, with Numerals; including Gothic, Church-Text, German, Italian, Arabesque, Initials, Monograms, Crosses, &c. Collected and engraved by F. DELAMOTTE, and printed in Colours. New and Cheaper Edition. Royal 8vo, oblong, 2s. 6d. ornamental boards.

"For those who insert enamelled sentences round gilded chalices, who blazon shop legends over shop-doors, who letter church walls with pithy sentences from the Decalogue, this book will be useful."—*Athenæum*.

EXAMPLES OF MODERN ALPHABETS, PLAIN and ORNAMENTAL; including German, Old English, Saxon, Italic, Perspective, Greek, Hebrew, Court Hand, Engrossing, Tuscan, Riband, Gothic, Rustic, and Arabesque, &c., &c. Collected and engraved by F. DELAMOTTE, and printed in Colours. New and Cheaper Edition. Royal 8vo, oblong, 2s. 6d. ornamental boards.

"There is comprised in it every possible shape into which the letters of the alphabet and numerals can be formed."—*Standard*.

MEDIÆVAL ALPHABETS AND INITIALS FOR ILLUMINATORS. By F. DELAMOTTE. Containing 21 Plates, and Illuminated Title, printed in Gold and Colours. With an Introduction by J. WILLIS BROOKS. Small 4to, 6s. cloth gilt.

THE EMBROIDERER'S BOOK OF DESIGN; containing Initials, Emblems, Cyphers, Monograms, Ornamental Borders, Ecclesiastical Devices, Mediæval and Modern Alphabets, and National Emblems. Collected and engraved by F. DELAMOTTE, and printed in Colours. Oblong royal 8vo, 1s. 6d. ornamental wrapper.

Wood-Carving.

INSTRUCTIONS in WOOD-CARVING, for Amateurs; with Hints on Design. By A LADY. In emblematic wrapper, handsomely printed, with Ten large Plates, 2s. 6d.

"The handicraft of the wood-carver, so well as a book can impart it, may be learnt from 'A Lady's' publication."—*Athenæum*.

Popular Work on Painting.

PAINTING POPULARLY EXPLAINED; with Historical Sketches of the Progress of the Art. By THOMAS JOHN GULLICK, Painter, and JOHN TIMBS, F.S.A. Fourth Edition, revised and enlarged. With Frontispiece and Vignette. In small 8vo, 6s. cloth.

* * * This Work has been adopted as a Prize-book in the Schools of Art at South Kensington.

"Contains a large amount of original matter, agreeably conveyed."—*Builder*.

"Much may be learned, even by those who fancy they do not require to be taught, from the careful perusal of this unpretending but comprehensive treatise."—*Art Journal*.

PUBLISHED BY CROSBY LOCKWOOD & CO.



AGRICULTURE, GARDENING, ETC.

Youatt and Burn's Complete Grazier.

THE COMPLETE GRAZIER, and FARMER'S and CATTLE-BREEDER'S ASSISTANT. A Compendium of Husbandry. By WILLIAM YOUATT, ESQ., V.S. 12th Edition, very considerably enlarged, and brought up to the present requirements of agricultural practice. By ROBERT SCOTT BURN. One large 8vo. volume, 860 pp. with 244 Illustrations. 12. 1s. half-bound.

"The standard and text-book, with the farmer and grazier."—*Farmer's Magazine*.

"A treatise which will remain a standard work on the subject as long as British agriculture endures."—*Mark Lane Express*.

History, Structure, and Diseases of Sheep.

SHEEP; THE HISTORY, STRUCTURE, ECONOMY, AND DISEASES OF. By W. C. SPOONER, M.R.V.C., &c. Fourth Edition, with fine engravings, including specimens of New and Improved Breeds. 366 pp., 4s. cloth.

Production of Meat.

MEAT PRODUCTION. A Manual for Producers, Distributors, and Consumers of Butchers' Meat. Being a treatise on means of increasing its Home Production. Also comprehensively treating of the Breeding, Rearing, Fattening, and Slaughtering of Meat-yielding Live Stock; Indications of the Quality; Means for Preserving, Curing, and Cooking of the Meat, etc. By JOHN EWART. Numerous Illustrations. Cr. 8vo, 5s. cloth.

"A compact and handy volume on the meat question, which deserves serious and thoughtful consideration at the present time."—*Meat and Provision Trades Review*.

Donaldson and Burn's Suburban Farming.

SUBURBAN FARMING. A Treatise on the Laying Out and Cultivation of Farms adapted to the produce of Milk, Butter and Cheese, Eggs, Poultry, and Pigs. By the late Professor JOHN DONALDSON. With considerable Additions, Illustrating the more Modern Practice, by R. SCOTT BURN. With Illustrations. Second Edition. 12mo, 4s. cloth boards.

Modern Farming.

OUTLINES OF MODERN FARMING. By R. SCOTT BURN. Soils, Manures, and Crops—Farming and Farming Economy—Cattle, Sheep, and Horses—Management of the Dairy, Pigs, and Poultry—Utilisation of Town Sewage, Irrigation, &c. New Edition. In 1 vol. 1250 pp., half-bound, profusely illustrated, 12s.

"There is sufficient stated within the limits of this treatise to prevent a farmer from going far wrong in any of his operations."—*Observer*.

Kitchen Gardening.

KITCHEN GARDENING MADE EASY. Showing how to prepare and lay out the ground, the best means of cultivating every known Vegetable and Herb, etc. By GEORGE M. F. GLENNY. 12mo, 2s. cloth boards.

The Management of Estates.

LANDED ESTATES MANAGEMENT: Treating of the Varieties of Lands, Methods of Farming, the Setting-out of Farms, Construction of Roads and Farm Buildings, of Waste or Un-productive Lands, Irrigation, Drainage, &c. By R. SCOTT BURN. Second Edition. 12mo, 3s. cloth.

"A complete and comprehensive outline of the duties appertaining to the management of landed estates."—*Journal of Forestry*.

The Management of Farms.

OUTLINES OF FARM MANAGEMENT, and the Organization of Farm Labour. Treating of the General Work of the Farm, Field, and Live Stock, Details of Contract Work, Specialties of Labour, Economical Management of the Farmhouse and Cottage, Domestic Animals, &c. By ROBERT SCOTT BURN. 12mo, 3s.

Management of Estates and Farms.

LANDED ESTATES AND FARM MANAGEMENT. By R. SCOTT BURN. With Illustrations. Consisting of the above Two Works in One vol., 6s. half-bound.

English Agriculture.

THE FIELDS OF GREAT BRITAIN. A Text-book of Agriculture, adapted to the Syllabus of the Science and Art Department. For Elementary and Advanced Students. By HUGH CLEMENTS (Board of Trade). With an Introduction by H. KAINS-JACKSON. 18mo, 2s. 6d. cloth. [Just published.]

"A clearly written description of the ordinary routine of English farm-life."—*Land*.

"A carefully written text-book of Agriculture."—*Athenæum*.

"A most comprehensive volume, giving a mass of information."—*Agricultural Economist*.

Culture of Fruit Trees.

FRUIT TREES, the Scientific and Profitable Culture of. From the French of DU BREUIL, revised by GEO. GLENNY. 12mo, 4s.

Good Gardening.

A PLAIN GUIDE TO GOOD GARDENING; or, How to Grow Vegetables, Fruits, and Flowers. With Practical Notes on Soils, Manures, Seeds, Planting, Laying-out of Gardens and Grounds, &c. By S. WOOD. Third Edition. Cr. 8vo, 5s. cloth.

"A very good book, and one to be highly recommended as a practical guide. The practical directions are excellent."—*Athenæum*.

Gainful Gardening.

MULTUM-IN-PARVO GARDENING; or, How to make One Acre of Land produce £620 a year, by the Cultivation of Fruits and Vegetables; also, How to Grow Flowers in Three Glass Houses, so as to realise £176 per annum clear Profit. By SAMUEL WOOD. 3rd Edition, revised. Cr. 8vo, 2s. cloth.

"We are bound to recommend it as not only suited to the case of the amateur and gentleman's gardener, but to the market grower."—*Gardener's Magazine*.

Early Fruits, Flowers and Vegetables.

THE FORCING GARDEN: or, How to Grow Early Fruits, Flowers, and Vegetables. With Plans and Estimates showing the best and most economical way of Building Glasshouses, Pits, and Frames for the various classes, &c. By SAMUEL WOOD, Author of "Good Gardening," &c. Crown 8vo. 3s. 6d. [Just published.]

Gardening for Ladies.

THE LADIES' MULTUM-IN-PARVO FLOWER GARDEN, and Amateur's Complete Guide. By SAMUEL WOOD. Author of "Good Gardening," &c. With Illustrations. Crown 8vo, 3s. 6d. cloth.

[Just published.]

Bulb Culture.

THE BULB GARDEN, or, How to Cultivate Bulbous and Tuberous-rooted Flowering Plants to Perfection. A Manual adapted for both the Professional and Amateur Gardener. By SAMUEL WOOD, Author of "Good Gardening," etc. With Coloured Illustrations and Wood Engravings. Cr. 8vo, 3s. 6d. cloth.

Tree Planting.

THE TREE PLANTER AND PLANT PROPAGATOR: Being a Practical Manual on the Propagation of Forest Trees, Fruit Trees, Flowering Shrubs, Flowering Plants, Pot Herbs, &c. Numerous Illustrations. By SAMUEL WOOD. 12mo, 2s. 6d. cloth.

Tree Pruning.

THE TREE PRUNER: Being a Practical Manual on the Pruning of Fruit Trees. Including also their Training and Renovation, also treating of the Pruning of Shrubs, Climbers, and Flowering Plants. By SAMUEL WOOD. 12mo, 2s. 6d. cloth.

Tree Planting, Pruning, & Plant Propagation.

THE TREE PLANTER, PROPAGATOR, AND PRUNER. By SAMUEL WOOD, Author of "Good Gardening," &c. Consisting of the above Two Works in One Vol., 5s. half-bound.

Potato Culture.

POTATOES, HOW TO GROW AND SHOW THEM: A Practical Guide to the Cultivation and General Treatment of the Potato. By JAMES PINK. With Illustrations. Cr. 8vo, 2s. cl.

Hudson's Tables for Land Valuers.

THE LAND VALUER'S BEST ASSISTANT: being Tables, on a very much improved Plan, for Calculating the Value of Estates. With Tables for reducing Scotch, Irish, and Provincial Customary Acres to Statute Measure, &c. By R. HUDSON, C.E. New Edition, royal 32mo, leather, gilt edges, elastic band, 4s.

Ewart's Land Improver's Pocket-Book.

THE LAND IMPROVER'S POCKET-BOOK OF FORMULÆ, TABLES, and MEMORANDA, required in any Computation relating to the Permanent Improvement of Landed Property. By JOHN EWART, Land Surveyor and Agricultural Engineer. Royal 32mo, oblong, leather, gilt edges, with elastic band, 4s.

Complete Agricultural Surveyor's Pocket-Book.

THE LAND VALUER'S AND LAND IMPROVER'S COMPLETE POCKET-BOOK; consisting of the above two works bound together, leather, gilt edges, with strap, 7s. 6d.

"We consider Hudson's book to be the best ready-reckoner on matters relating to the valuation of land and crops we have ever seen, and its combination with Mr. Ewart's work greatly enhances the value and usefulness of the latter-mentioned.—It is most useful as a manual for reference."—*North of England Farmer.*

'A Complete Epitome of the Laws of this Country.'

EVERY MAN'S OWN LAWYER; a Handy-Book of the Principles of Law and Equity. By A BARRISTER. New Edition, much enlarged. Corrected to the end of last Session. With Notes and References to the Authorities. Crown 8vo, cloth, price, 6s. 8d. (saved at every consultation).

COMPRISING THE RIGHTS AND WRONGS OF INDIVIDUALS, MERCANTILE AND COMMERCIAL LAW, CRIMINAL LAW, PARISH LAW, COUNTY COURT LAW, GAME AND FISHERY LAWS, POOR MEN'S LAW, THE LAWS OF

BANKRUPTCY—BILLS OF EXCHANGE—CONTRACTS AND AGREEMENTS—COPYRIGHT—DOWER AND DIVORCE—ELECTIONS AND REGISTRATION—INSURANCE—LIBEL AND SLANDER—MORTGAGES—

SETTLEMENTS—STOCK EXCHANGE PRACTICE—TRADE MARKS AND PATENTS—TRESPASS, NUISANCES, ETC.—TRANSFER OF LAND, ETC.—WARRANTY—WILLS AND AGREEMENTS, ETC.

Also Law for Landlord and Tenant—Master and Servant—Workmen and Apprentices—Heirs, Devisees, and Legatees—Husband and Wife—Executors and Trustees—Guardian and Ward—Married Women and Infants—Partners and Agents—Lender and Borrower—Debtor and Creditor—Purchaser and Vendor—Companies and Associations

—Friendly Societies—Clergymen, Churchwardens—Medical Practitioners, &c.—Bankers—Farmers—Contractors—Stock and Share Brokers—Sportsmen and Gamekeepers—Farriers and Horse-Dealers—Auctioneers, House-Agents—Innkeepers, &c.—Pawnbrokers—Surveyors—Railways and Carriers, &c., &c.

"No Englishman ought to be without this book."—*Engineer.*

"What it professes to be—a complete epitome of the laws of this country, thoroughly intelligible to non-professional readers. The book is a handy one to have in readiness when some knotty point requires ready solution."—*Bell's Life.*

"A useful and concise epitome of the law."—*Law Magazine.*

Auctioneer's Assistant.

THE APPRAISER, AUCTIONEER, BROKER, HOUSE AND ESTATE AGENT, AND VALUER'S POCKET ASSISTANT, for the Valuation for Purchase, Sale, or Renewal of Leases, Annuities, and Reversions, and of property generally; with Prices for Inventories, &c. By JOHN WHEELER, Valuer, &c. Fourth Edition, enlarged, by C. NORRIS. Royal 32mo, cloth, 5s.

"A concise book of reference, containing a clearly-arranged list of prices for inventories, a practical guide to determine the value of furniture, &c."—*Standard.*

Auctioneering.

AUCTIONEERS: THEIR DUTIES AND LIABILITIES.

By ROBERT SQUIBBS, Auctioneer. Demy 8vo, 10s. 6d. cloth.

House Property.

HANDBOOK OF HOUSE PROPERTY: a Popular and Practical Guide to the Purchase, Mortgage, Tenancy, and Compulsory Sale of Houses and Land; including the Law of Dilapidations and Fixtures, &c. By E. L. TARBUCK. 2nd Edit. 12mo, 3s. 6d. cloth.

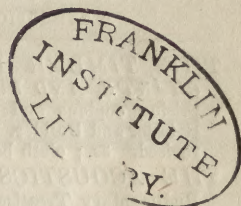
"We are glad to be able to recommend it."—*Builder.*

"The advice is thoroughly practical."—*Law Journal.*

Metropolitan Rating.

METROPOLITAN RATING: a Summary of the Appeals heard before the Court of General Assessment Sessions at Westminster, in the years 1871–80 inclusive. Containing a large mass of very valuable information with respect to the Rating of Railways, Gas and Waterworks, Tramways, Wharves, Public Houses, &c. By EDWARD and A. L. RYDE. 8vo, 12s. 6d. [Just published.]

Bradbury, Agnew, & Co., Printers, Whitefriars, London.



A SELECTION FROM WEALE'S SERIES.

THE TIMBER IMPORTER'S, TIMBER MERCHANT'S, AND BUILDER'S STANDARD GUIDE: comprising copious and valuable Memoranda for the Use of the Retailer and Builder. By RICHARD E. GRANDY. Second Edition, revised. 2s. cloth boards. 2s. 6d.

Date Due			
TE			
E			
S			
I			
CA			
c			
a			
t			
h			
CA			
t			
h			
CO			
r			
I			
QU			
l			
h			
l			
C			
LO			
l			
l			
l			
4			
AI			
l			
VI			
l			
G			
l			
D			
l			
l			
M			
l			



HEATHER, M.A. ILLUSTRATED. 1S. 6D.

CROSBY LOCKWOOD & CO., 7, STATIONERS' HALL COURT, E.C.

A SELECTION FROM WEALE'S SERIES.

MECHANICAL ENGINEERING, &c.

MATERIALS AND CONSTRUCTION : a Theoretical and Practical Treatise on the Strains, Designing, and Erection of Works of Construction. By FRANCIS CAMPIN, C.E. ; cloth boards, 3s. 6d. [Just published.]

THE BOILERMAKERS' ASSISTANT, in Drawing Templating, and Calculating Boiler and Tank Work. By JOHN COURTNEY, Practical Boilermaker. Revised and Edited by D. KINNEAR. 2s. [Just published.]

SEWING 692.5 B383 Ed5
Sewing Machine Construction, with Sewing Machine. 2s. 6d.

THE CONSTRUCTION 601
Manufacture of SAMUEL KINNEAR. 5s.

FUEL, the Management of the Combustion of Fuel. By SAMUEL KINNEAR. 5s.
ABRIDGMENT, of the Prevention of Extensive Economy, by D.

MECHANICAL C. TOMLINSON.

STEAM Stationary and Portable Engines. Extension of Mr. KINNEAR.

THE SCIENCE OF MATHEMATICS 1s. 6d.

STEAM 1s. 6d.
MANAGEMENT 1s. 6d.

MARINE ENGINES, with Practical Remarks on the Screw and Propelling Power. By ROBERT MURRAY, C.E. 7th Edition. 3s. ; cloth boards, 3s. 6d.

MECHANISM, the Elements of ; elucidating the Scientific Principles of the Practical Construction of Machines. With Specimens of Modern Machines, by T. BAKER, C.E. ; and Remarks on Tools, &c., by J. NASMYTH, C.E. Plates. 2s. 6d. ; cloth boards, 3s.

THE BRASSFOUNDER'S MANUAL. By W. GRAHAM. 2s. ; cloth boards, 2s. 6d.

MODERN WORKSHOP PRACTICE as applied to Marine, Land, and Locomotive Engines, Floating Docks, Bridges, Cranes, Ship-building, &c. By J. G. WINTON. 3s. ; cl. bds., 3s. 6d.

THE WORKMAN'S MANUAL OF ENGINEERING 3s. 6d. ; cloth boards, 4s.



ONERS' HALL COURT, E.C.

